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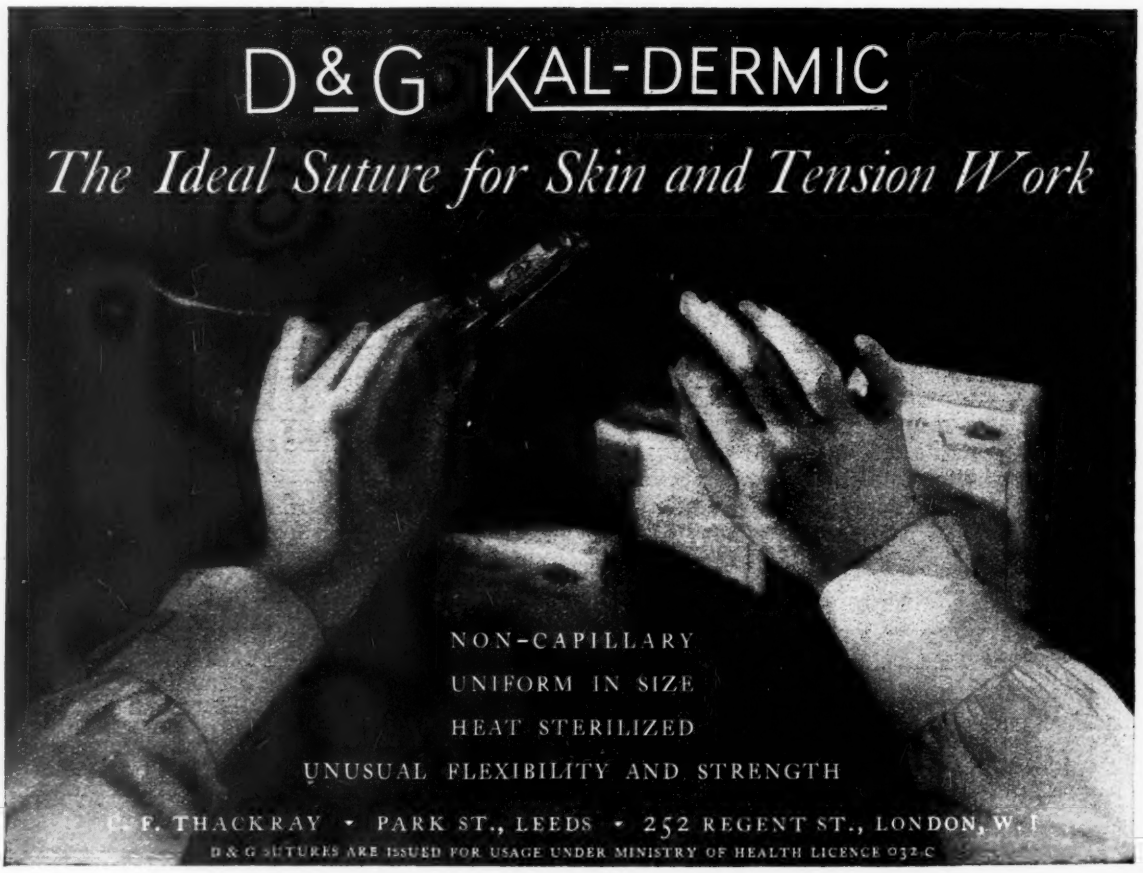

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British Medical Association

CENTENARY MEETING, LONDON, JULY, 1932

President's Address

ON

ONE HUNDRED YEARS AND AFTER

BY

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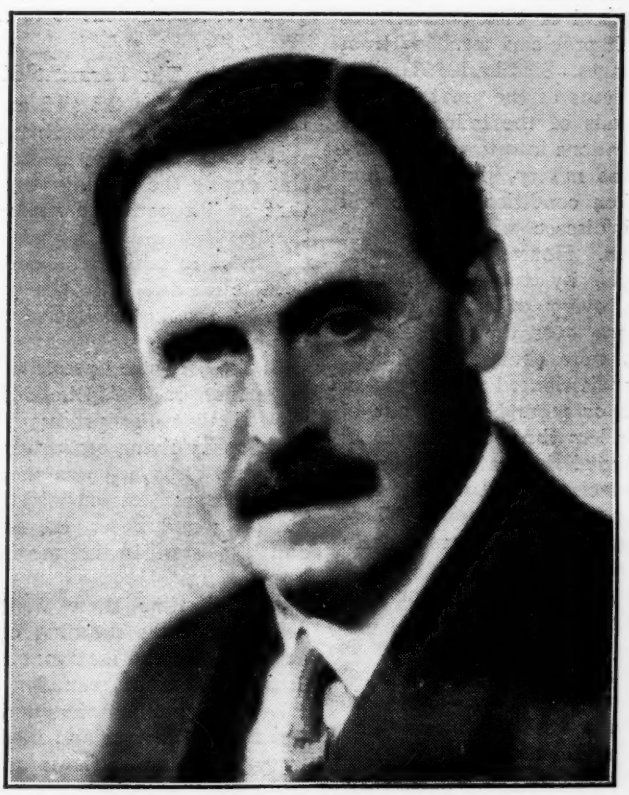
The Historic Background

Our art has a background of history rich beyond compare. There appears, through the twilight of history in Egypt fifty centuries ago, an art of healing mature in form and with it a leader of men. Imhōtep was born about 3000 B.C. and belonged to the time of King Zoser of the Third Dynasty. Great in learning and achievement, he was statesman, sage, priest, physician, architect, and astronomer. As priest and physician he founded an art of medicine which occupied a prominent place in the polity of Egypt through the succeeding centuries, and became merged with the medicine of Greece, and influenced the thought and practice of medicine during the early centuries of the Christian era.



Dawson of Penn

The custom of mummification encouraged the study of natural and morbid anatomy. There existed a knowledge of the bones and the splinting of fractures. There was knowledge of the digestive organs, of the heart and blood vessels connected with it, though they did not realize the heart was a pump, and the vessels were thought to convey air as well as blood—a mistake rather of method than of fact. They developed a classification of diseases which proved their acceptance of the value of observation. They possessed formidable materia medica, many items of which have descended to our day, notably the use of enemata and castor oil, and they even prescribed the latter to be taken with beer. The tree of knowledge was obscured by the magic which entwined it. The conviction that disease was caused by a living spirit entering the body and sapping the vital substance, and that salvation was to be found by appeal to the deities who could bring aid and the appeasement of evil spirits, had such a stranglehold of the Egyptian mind as to blunt its perception of the natural history of disease, and so it was that the application of physical remedies went hand in hand with rites such as incantation and incubation, the dominance of science or sorcery depending on the bent of mind of the physician.

This cult of Imhōtep was beneficent in intention and brought to the people healing, support, and solace; but with the lapse of time the ivy outgrew and obscured the tree, and the ritual of shrines and temples eclipsed medical knowledge, and the latter from 1000 B.C. onwards lapsed into stillness. Thus the art of medicine which ushered in the dawn of Egyptian greatness preceded it into the shadows, and in result but little ascertained truth floated down the stream of time during those many centuries. None the less Imhōtep the Physician gave inspiration and direction to the march of a people and was elevated to demigod in 2850 B.C. and to a full deity in 525 B.C., by which time the Greek learning was gathering influence and the cults of Imhōtep and Asclepios became henceforth blended.

I pass to a nearer though greater background — the wonderful age of Pericles which gave the world Hippocrates. In the teaching of Hippocrates mythology was put aside, the supernatural in medicine was rejected, and the observation of disease, objective examination, and the importance of prognosis were the outstanding features. To this day we not only follow his methods but treasure his wisdom.

In the Christian era, alas! there was retrogression; and the growing power of Christianity, although fostering a spirit of service, delayed rather than promoted medical progress. The natural origin of disease did not find acceptance, and the devitalizing magic of the Egyptians

returned in no less force because of its altered guise. And the opposition of Christianity to scientific progress for the most part continued, though with diminishing repression, till later days. At the same time it is only fair to say that the Church took a prominent interest in the cure of the sick, and that some of its priests, with the hesitating consent of their Superiors, practised the art of medicine.

Having then done obeisance to Imhōtep and Hippocrates and other early masters in our art let me pass to the consideration of the hundred years it is our purpose to celebrate.

This address does not envisage a recital, still less a description of discovery. It rather seeks to consider the directions along which knowledge has grown during the century under review and the trends of thought and action which have thereby resulted. How are the problems of the practice of medicine being modified on the one hand by this advance of knowledge and on the other by the rapid changes in material civilization? What is the role of medicine in that statesmanship which aims at the health and welfare of the people? I have tried to keep in mind that I have the honour of addressing not only doctors but the public. I need the indulgence of both.

Medical Problems of the Early Years

The opening of the period found medicine without as yet the guidance of either physical or biological science and at the same time faced with problems resulting from profound political and social changes. Sir Charles Hastings founded this Association in the year of the great Reform Bill at a time when the demands of the industrial age were forcing masses of the populations into towns unready to receive them. The result was misery, ill-health, and discontent. To consider the then conditions of life will make clear the disability and disease with which the medical profession had to strive. Houses already overcrowded were deprived of light by the operation of the Window Tax imposed on every extra window in a house which indulged in "one over the eight" permitted. The smaller dwellings were commonly without a supply of water, which was distributed by means of standpipes (one to some fifteen or more houses), out of which water ran for an hour or less three or more times in a week. The inhabitants carried the water or bought it from carts and stored it in vessels. Small wonder that they washed neither their houses nor their persons. There was a saying that only on entering the world and again on leaving it was a citizen well washed.

Till those days houses were either undrained or connected with cesspools; and sewers were built only to carry off water from the land and empty it into rivers. As the population rapidly increased the honeycombs of cesspools became inadequate and overflowed into and saturated the soil. House drainage was then for the first time connected to the sewers, with the result that the rivers became large open cesspools, and if these rivers ran through towns the effects were disastrous. In London, for instance, the Serpentine became an open sewer which drained Kilburn, Paddington, and Bayswater. Infective diseases ravaged the land. One is reminded of Aristotle's dictum:

> "The greatest influence upon health is exerted by those things which we most freely and frequently require for our existence, and this is especially true of water and air."

During the year of this Association's birth the country was in the throes of a cholera epidemic from which the number of deaths in England and Wales exceeded 50,000. In 1848 cholera was responsible for 5,275 deaths in London—a mortality of nearly 48 per cent. of the cases. Typhoid and typhus and diphtheria were ever-present perils. The infection of wounds, erysipelas, and gangrene made the surgical wards of hospitals sources of danger.

There was still planted in men's minds the idea that epidemic diseases were visitations beyond our ken and control and having origin in disturbances of earth or sky or in the minds of gods—habits of thought little different from those belonging to the age of Egyptian medicine. A break from this tradition of helplessness came with growing confidence in vaccination. In the first two years of Queen Victoria's reign there were 30,000 deaths from small-pox in England and Wales, apart from numberless people disabled or disfigured. In 1840 optional vaccination was provided by law, and by 1853 the mortality had been reduced 50 per cent. In 1853 vaccination of infants was made compulsory, and by 1863 the mortality had been reduced a further 30 per cent.

The attitude of authority towards epidemics is shown by the following minute:

> "*November 11th, 1831.*—The Board agreed to take precautions against Cholera, along with the Town Trustees, Church Burgesses, Magistrates, Surveyors of Highways, Church Wardens and Overseers."

Another minute throws light on the standard of nursing:

> "*January 5th, 1849.*—Resolved that an advertisement be inserted in each of the papers to-morrow for a nurse who can read and write, or at least read writing, and must produce good recommendations as to character and ability."

The Ferment of New Knowledge

Altogether for the sick and disabled and for those who tended them it was a struggle in the darkness with little to lighten the pathway till the eighties of last century. But during the waiting years great minds were working—that of Virchow, for example, in cellular pathology, of Claude Bernard in physiology, of Bright in medicine, Chadwick in sanitation—and in 1859 the world of thought became aglow with the publication of the *Origin of Species*, the first edition of which was sold out on the day of publication.

In 1857, Pasteur presented to the Academy of Sciences his paper on "Alcoholic Fermentation," in which he showed that the process was a vital one and due to invasion by living organisms. Little can he have thought that this discovery was the dawn of an era. During the early 'sixties he demonstrated the presence of bacteria in air, dust, and water, the power of heat to destroy them, and the sterility of media protected from their contamination.

At this time there went to Glasgow Joseph Lister. Seized with the meaning of Pasteur's experiments there came to him the idea that germs from outside caused the decomposition of wounds. After five years Lister had solved the problem of wound infection and modern surgery was born. Pasteur and Lister were the world's deliverers. They had followed the injunction of Harvey to search out and study the secrets of Nature by experiment.

From 1865, onwards for six years, Pasteur turned his attention to silkworm disease, and this like other of his researches had the stimulus of direct public purpose, for the preventive measures he devised saved that industry. There were two diseases each of which was due to a specific infection. When experimentally transmitted from worm to worm in series the period of incubation of an infection was shortened and the virulence increased and the worms showed variations in susceptibility and resistance. Here light was thrown on the problem of infection. Further landmarks on the road of knowledge were afforded by Pasteur's researches into epidemic chicken cholera. He found that cultures of the organism lost their strength

with age, and that by inoculating fowls with these attenuated cultures he conferred on them immunity against chicken cholera—in short, he had laid the foundation of preventive vaccination. He further discovered that this micro-organism which was virulent in its effect on fowls was mild in guinea-pigs—that whereas fowls were very ill and died, the disease produced local abscesses but not illness in guinea-pigs. Thus the conception of the carrier.

Next anthrax ; and now on the stage beside Pasteur comes Koch—the one a chemist and the other a country doctor. Koch first and Pasteur later demonstrated the constant presence of germs in the blood of animals suffering from anthrax: they grew those germs on suitable media outside the body through several generations and reproduced the disease in animals from the last subculture. There followed the demonstration of preventive inoculation against anthrax in dramatic manner. Twenty-five sheep were vaccinated by attenuated cultures of anthrax and twenty-five controls were left unvaccinated. Subsequently the whole of the fifty sheep were inoculated with a virulent culture of anthrax. The vaccinated sheep all recovered and the non-vaccinated all died.

The climax of Pasteur's discoveries was the cause and prevention of rabies. Here was a dread disease, comparatively rare, affecting the nervous system, and with a long incubation of weeks or even months. By changing the seat of inoculation from the skin to the surface of the brain he shortened the period of incubation from months to weeks. By passing the disease from rabbit to rabbit in series he raised the virulence of the infection and shortened the inoculation period to one week. By keeping the spinal cords of mortally infected rabbits in dry air he found the virus in them became attenuated proportionately to the length of such preservation. By inoculating dogs from these rabbit cords, in doses of increasing specific strength, these dogs were found to be protected. Then came a dramatic happening—a boy from Lorraine bitten badly by a mad dog—he was given injections of increasing strength for nine days. The protective virus with its short period of incubation got ahead of the mad dog virus with its longer incubation period. The boy was saved and thus was established the preventive treatment of hydrophobia for the benefit of the world.

This culminating achievement brings us into the eighties of last century. Pasteur and Lister had given men's minds a new impulse—their thought a new direction—the world a new learning—the beginning of it all had been Pasteur's study of the law of fermentation. It is interesting to recall that this new learning had been rendered possible by the completion of the compound microscope by Lister's father in 1830. Yet another association: this year is the tercentenary of the birth of Leeuwenhoek, creator of the first microscope, and the first learned body to recognize this important advance was the Royal Society of this country.

Then the harvest—in 1882 Koch demonstrated the tubercle bacillus—an event great in itself and in consequence. There followed the discovery in rapid succession of the causal germs of typhoid, diphtheria, cholera, tetanus,* plague, pneumonia, gonorrhoea. Nor must we forget the discovery of the causal germ of Mediterranean fever by Bruce. The position of bacteriology had become commanding and caused the dry bones of pathology to live.

Beside Pasteur stands the figure of Manson, the Father of Tropical Medicine. Alone and unaided at Amoy in 1877 he demonstrated the periodicity of filariae in the blood (first discovered by Timothy Rees)—their numbers increasing till midnight and disappearing by noon. He was the first in 1879 to perceive the role of the blood-sucking insect. With only meagre apparatus and after months of work he ultimately succeeded in tracing the filaria through the stomach wall of the mosquito, and thence into its thoracic muscles, and he observed that during its passage the little parasite increased enormously in size ; it developed a mouth, an alimentary canal, and other organs, and he says, " manifestly it was on the road to a new human host." Listen next to his prophetic words in a letter to Cobbold in June, 1879—and please note these dates:

> " This is a striking and most suggestive fact, and in connexion with it one might be tempted to speculate on the causes of the periodicity of malarial fevers. It is marvellous how nature has adapted the habits of the filariae to those of the mosquito. The embryos are in the blood just at the time the mosquito selects for feeding."

The malarial parasite was in fact demonstrated a year later (1880) by Laveran—a young Frenchman—but this discovery fell upon stony ground. Even in 1893 Ross writing in the *Indian Medical Gazette* speaks of " the supposed haematozoon." Then in 1897 Manson demonstrated to Ross in London the malarial parasite and its crescents. As a result " Ross not only went in with the few who received Manson's theory with joy," but became the convinced adherent who voluntarily undertook the labours of demonstrating its fundamental truth and in the event gave it the perfect precision it had hitherto lacked. Years later, in 1909, when vacating the presidential chair of the Society of Tropical Medicine, Manson with characteristic largeness of heart claimed credit for himself " not so much for having formulated the mosquito-malaria theory as for having discovered Ronald Ross."

Following Manson's vision of insect-borne diseases the road of discovery opened out. Bruce was the first to demonstrate the transmission by an insect of a protozoal disease—namely, the tsetse fly as the conveyor of nagana disease in cattle ; Ross demonstrated the transmission of malaria by the mosquito ; and by 1900 yellow fever, one of the world's worst scourges, had been shown beyond peradventure, by a commission in Cuba, to be similarly conveyed. David Bruce correlated the tsetse fly with sleeping sickness: the cause and transmission of amoebic dysentery became known, and in 1905 came the discovery of the spirochaete of syphilis by Schaudinn.

The knowledge of bacterial and protozoal diseases achieved in the closing years of the nineteenth century was soon to be put to valuable test. Pestilence had played a large part in defeating past attempts to build the Panama Canal, so when the United States undertook that project in 1904 it first established a health administration under General Gorgas. In two years the mortality amongst the workers was reduced by two-thirds. Yellow fever had been banished and dysentery was under control —altogether an example of statesmanship directed by medical knowledge.

The Acceptance of New Truths

It is interesting to reflect on the varying degrees of difficulty which new truths have to encounter. In retrospect one wonders at the want of receptiveness in men's minds. That the discovery of the anthrax bacillus in the blood of patients roused men's minds while the previous discoveries in the blood of the malarial parasite (1880) and of the spirillum in relapsing fever (1873) were but little noticed, is an instance of how the implantation of truth depends not only on its discovery but on the readiness of men's minds to receive it.

* To Kitasato in 1889 we are indebted for obtaining the tetanus bacillus in pure culture, and with Behring for antitetanic serum.

The history of anaesthesia affords a striking example of how long truth may remain unheeded. The anaesthetic properties of nitrous oxide were described by Humphry Davy in 1800 and those of ether by Faraday in 1818. Hickman tried in both England and France in the years 1824 to 1828 to secure consideration for anaesthesia as a practice. Yet despite repeated stimuli the imagination of the medical world remained untouched. To the year 1844 does not belong the discovery of anaesthesia but its acceptance—nearly half a century after the birth of the idea.

On the other hand, it cannot be said that the acceptance of the infective theory of disease and its meanings lingered unduly, and this was no doubt due in large measure to the qualities of character of its apostles. Pasteur had to dissolve long-established belief and he did it by a notable quality of appeal. From his genius came a revelation which time is still unfolding. Lister had not only to win men's minds but conquer the fixed habits of a craft and he did it with a patience only equalled by his persistence. Nevertheless a generation of disciples bred in its methods was needed to bring his teaching to fruition. Even he from the heights of Pisgah saw but dimly the promised land—neither encompassing the surgery nor performing the operations which his own discoveries had rendered possible. The beauty of Lister's character is illustrated in a letter he wrote to Pasteur in 1874:

"Allow me to take this opportunity to tender you my most cordial thanks for having by your brilliant researches demonstrated to me the truth of the germ theory of putrefaction, and thus furnished me with the principle upon which alone the antiseptic system can be carried out. Should you at any time visit Edinburgh, it would, I believe, give you sincere gratification to see at our hospital how largely mankind is being benefited by your labours."

Thus with the early years of this century the craft of surgery, never lacking in technical skill, was set free and with results fruitful of great benefit to mankind. It has lately been stated with authority* that the craft of surgery had "almost reached the end of its progress along the lines which so far it has followed," that "the full fruits of Lister's work have now been garnered," and that with operations now carried out upon every organ in the body little further success can be expected. This gives me to wonder and to think. Surely surgery has not reached so gloomy a finality. "Life is short but Art is long." Listerism which freed surgery of its chains is surely a great permanent possession which conditions all progress but without determining the nature or limit of that progress.

On the other hand, has not the extension of the field of surgery been determined by the growth of knowledge derived from physiology and pathology and by improvements in technique? The researches of Pavlov gave inspiration to the surgery of the alimentary tract, and radiology and chemistry have been increasingly reliable guides. The change is not in facts but in habits of thought. At the beginning of this century when surgery took possession of the freedom Lister bestowed upon it, there was a bound ahead and with it an exuberance of craft, which was sometimes forgetful of physiology and wider clinical considerations. That detachment has passed and surgery has come back into the fold of medical knowledge. And has not the craft of surgery large fields yet to conquer? There come to my mind the thorax, the arteries, the nervous system, and the ductless glands, as examples which are on the threshold of their possibilities whether of purpose or technique.

* Romanes Lecture (1932) by Lord Moynihan. A similar view was expressed by Professor Erichsen in his introductory address at University College, London, in 1873.

Chemistry and Physics in the Service of Medicine

In the present century physics and chemistry in linkage with physiology have taken pride of place in their services to medical knowledge. The growth of the science and craft of radiology following Roentgen's discovery in 1895 and the development of radium therapy have been features of the present century.

Biochemistry gives us the means of quantitative assessment. It enables us to measure the normal processes of metabolism and learn full early of their departure from the standard of health. The estimation of the nitrogenous bodies in the blood has proved of great help in prognosis and treatment of kidney disease, while detection of a fall in the protein content of the plasma bespeaks the imminence of dropsy. The power to estimate sugar has rendered rational and exact the treatment of diabetes; and the chemistry of calcium has opened up a new field in clinical medicine. Indeed biochemistry, of which England is so proud, will be more and more a guiding star of progress.

A word on the aid which chemistry has afforded to therapeutics. It is giving us the active principles of long and well established remedies and so helping us to precision. It has provided us with invaluable synthetic anodynes, hypnotics, and sedatives—much needed in this hustling, nerve-racking world. Not least of its gifts are the means of inducing sleep and content as a prelude to anaesthesia—though we still await with hope an anodyne, local or general, which will ensure enduring freedom from pain, for there is no more powerful means of healing than the assuagement of pain and the lure of forgetfulness. Chemistry is further giving us specific remedies, the chief of which belong to the dyes and compounds of arsenic. Trypan blue, the substance known as 205 and its derivative 307, cure or control trypanosomiasis—thus conferring benefits on those who have to inhabit the vast districts ravaged by the tsetse fly. The cure of syphilis by arsenic and the discovery of its causal spirochaete are alike achievements of the present century. Pernicious anaemia, until recently a fatal malady, has, by the discovery of the anti-anaemic factor in liver and stomach by Minot and his colleagues, been converted into a simple deficiency disease.

Ultra-violet Rays: Vitamins

Though sunlight therapy dates back to Hippocrates its scientific application and that of artificially produced ultra-violet rays belong to the last twenty-four years. The treatment of tuberculous bones and joints by sunlight and immobilization has wrought wonders, and as in the case of phthisis has achieved an even greater good by the habits it has engendered among the healthy, for every patient cured becomes an apostle of light and air, often to the distress of his or her family.

One great interest attaching to these rays belongs to rickets. Here is a disease (a vital change) associated with deficiency of calcium. The ultra-violet rays produce, by their effects on the ergosterol in the skin, the vitamin D, which restores that deficiency. Here then are physical, chemical, and physiological events in causal sequence. The unfolding of the story of the antirachitic vitamin is a romance and a triumph of the experimental method for which this country deserves the chief credit. The isolation of this vitamin in crystalline form has been accomplished and the crystalline calciferol is so potent that it has 400,000 times the value of an equal weight of cod-liver oil,* and one ounce of it could produce the necessary daily ration for a million children—truly the "little leaven." A practical application of vitamin D to the formation and the growth of healthy teeth in children and prevention of their decay initiated by Mrs. Mellanby

* Report of the Medical Research Council, 1930–1, p. 10.

gives promise of far-reaching results in the promotion of the health of the coming generation.

There are now seven vitamins known, each of which is related to some indispensable function. They activate chemical changes within the tissues that underlie nutrition, on the study of which hang national issues. As regards the body, vitamins are imports, whereas hormones are home-grown products manufactured by the glands and disbursed by them into the blood stream.

Hormones

These bodies have a definite chemical composition, and like vitamins are potent in minute doses and are selective in their actions. They are produced as required by ductless glands, are carried by the blood, do their work and disappear. Some of them are relatively simple in their action. Thus secretin (described by Starling, to whom we owe the first description and conception of these bodies) has the relatively simple role of a chemical reflex. Its formation having been provoked by the appearance of acid chyme in the duodenum, secretin is absorbed into the blood, travels to the pancreas and liver and evokes the secretion of their digestive juices, and disappears. Again, the minute parathyroid glands, each measuring no more than 6 by 4 millimetres, have a relatively limited function in maintaining the level of lime salts in the blood. Let them be removed, the calcium content falls and tetany appears. Administration of parathyroid extract restores the calcium level and cures the tetany. Let these glands become overactive and the bones of the skeleton lose their calcium support and fractures ensue.

The suprarenal glands, regarded by the ancients as having miraculous powers, described by Eustachius in 1543 and by Addison from the clinical standpoint in 1835, are now known to produce two hormones—adrenaline from the medulla and eucortone from the cortex. It is of interest to note that an adrenaline-like substance is produced at the peripheral sympathetic nerve endings either by direct stimulation or by emotion.[1] The remarkable results which follow the administration of eucortone in Addison's disease more than suggest that yet another fatal disease has been mastered and a substitution therapy realized.[2]

Some of the internal glands have a wider range of activity and extend their influence over the mind and character. Have too much thyroid gland: the fires of life burn too fast and easily, the mind is too impressionable and meets life's troubles more than half-way as shown by the staring eyes, the trembling hands, and the palpitating heart. Remove a portion of this thyroid gland and the wheels of life move with more smoothness and content. Possess too little thyroid gland: the fires of life become a smoulder, you are cold in body and mind, you are a dullard in feeling and appearance, slow in thought, word, and deed, you may hardly have a soul. Then take thyroid extract and once more you feel—and look—human. The active principle of the thyroid extract —namely, thyroxine—thus determines our weal or woe by its quantitative gradation and those mental and emotional qualities which make or mar us. We are here also brought in contact with problems of conduct and self-determination.

But surely the pituitary is the wonder world of the ductless glands. This structure, consisting of two lobes and set in the base of the skull, though weighing not more than three-quarters of a gram, in a special sense presides over our destiny. The anterior lobe is the source of no fewer than four hormones which are concerned with growth, metabolism, and sex activity. The posterior lobe is the source of two hormones which are concerned with vaso-constriction and (in the pregnant woman) with parturition. I will restrict my attention to the sex hormones of the pituitary gland, and consider with them the hormones of the ovary and testicle, because the harvest of new knowledge gathered in increasing measure with the succeeding years is giving indications not only of clinical usefulness but of influence on scientific thought and sociological reactions.

The ovary produces two hormones, one from the ovarian follicle (oestrin) concerned with ovulation and oestrus and the other from the corpus luteum (progestin) which prepares the uterine mucosa for the reception and retention of the fertilized ovum. With failure of this secretion, progestin, the embryo does not become fixed in the uterus and dies. But both these ovarian hormones are mobilized by the overriding influence of the anterior pituitary hormone, prolan. Transplantation of a piece of the anterior pituitary body will by stimulating the oestrin hormone render, after the lapse of three or four days, an infantile female rodent sex-active and sex-attractive, thus pushing forward its sex maturity. From the posterior lobe of the pituitary gland comes, besides the vasopressor extract, a hormone (oxytocin) which by stimulating the pregnant uterus initiates parturition. In this the originating influence is thought to be the ovarian hormone (oestrin), which sensitizes the uterus to the action of the posterior pituitary.

Here then is a wonderful kingdom over which the minute pituitary gland rules enthroned in the middle of the skull. This gland presides over the destinies of ourselves and our descendants. The anterior lobe influences our growth and our sex—its dominance and degree. Without it—no sex desire—no conception; without the posterior lobe—no parturition. Perhaps Descartes was not far afield when he placed the soul in the pineal gland.

Further, the female sex hormone has been obtained in crystalline form from the urine of pregnant women and has a chemical structure represented by $C_{18}H_{22}O_2$, and one forty-millionth part of a gram of this pure substance produces oestrus in the mouse; and last year we learned that the male hormone had also been crystallized and has a probable formula of $C_{16}H_{26}O_2$, and one ten-millionth of a gram of this substance is active and provokes marked comb growth in capons.* It is truly wonderful that so apparently slight a difference in the chemical structure of the male and female hormones should carry with it so vast a physiological distinction.

> "Oh the little more and how much it is!
> And the little less, and what worlds away!"

This expanding volume of knowledge must in time make clearer certain problems of sex in health and disease. Further, it perhaps foreshadows the time when sex perversion will belong more to pathology than to crime and require medical as well as legal handling.

There is evidence that even in the individual cell the action of oxygen is regulated by an activating factor or catalyst. In therapeutics too we think of a remedy as being provocative of change without sharing in it and perhaps breaking up after its provocative message has been delivered. That a vitamin or hormone can in minute quantity produce so extensive a physiological change suggests that it is determinant of, rather than a partner in, that change. The material units in germ or sperm—the chromosomes, which are concerned with inherited characters—are determinants which influence, rather than particles which participate. This dynamic conception suggests means of accord between processes of body and mind with both of which doctors are concerned.

[1] Dale.
[2] Swingle and Pfiffner, 1930; Theodore Thompson, *Lancet*, July, 1932.

* Tribute is due to biochemists for these advances in knowledge, and especially to the young German chemist Butenandt.

Maybe, the hormone is a go-between—a physical embodiment of influence.

To revert to bacteriology—the knowledge of immunity foreshadowed by Edward Jenner, established by Pasteur—rationalized by Ehrlich and others has grown and extended. In this country the mantle rests on the shoulders of Almroth Wright, who has enriched medicine not only by his discoveries but by provocative thought. The study of immunity brings us to realize how remedy lies within man himself—a potential energy which becomes kinetic in the face of the foe. Such remedy is aroused by external stimuli ; true it may be temporarily replaced by serum, but its origin and its power must come from within the tissues of the body. So it is with the hormone or the vitamin which is a determinant of rather than a partner in bodily reaction. If I may be tempted to make a parallel not complete, but adequate, a study of the body politic suggests that there is within it a power of recuperation which is called forth by morbid social processes. Of this it would be easy to produce examples from the life of to-day. The reaction of immunity may be provoked and encouraged from without by a process of progressive stimulation, but salvation lies within the organism itself—" Behold, the Kingdom of God is within you." How great a confidence does such an ordering of things inspire!

The Virus Diseases

Certain diseases of man, animals, and plants are caused by particulate organisms so minute as to be (most of them) invisible under the microscope and passable through filters which catch bacteria. I may give as examples: in man, measles, small-pox, infantile paralysis ; in animals, foot-and-mouth disease and dog distemper ; in plants, tobacco and banana diseases. These viruses are specific and multiply in the bodies of their hosts ; some are highly contagious ; some are transferable from the sick to the healthy by insects.

In size the " virus " organisms would appear to begin where the hitherto known bacteria end, their varieties tapering away into intangibility. It is their smallness which taxes not only our resources but our comprehension. We might even think of their size in terms of molecules. But history is repeating itself, and as histology and bacteriology needed for their being the completion of the compound microscope in 1830, so developments in the science of optics are aiding the study of the viruses to-day. By the use of the short ultra-violet rays and quartz instead of glass virus organisms have been photographed and measured.

Do not viruses in essentials " live and move and have their being " much as do visible pathogenic microbes?

The Art of Healing

The art of medicine embraces the understanding of illness no less than the morbid process, and if the physical and biological sciences are given a too exclusive attention they are apt to give to medical thought a too pronounced objectivity. We welcome their guidance and even their chastening but we have to be naturalists as well: we need to take count of the whole man.

What of personality and its infinite variety? What of environment? In these days when diseases of invasion are receding and diseases of stress loom larger both these factors receive accentuated importance. A man's physical and mental make-up—his inborn trends—play no small part in the clinical picture he presents. To take simple examples—in similar circumstances of stress one type of man will get hyperchlorhydria, hypertonic stomach, and it may be duodenal ulcer, while another man gets hypochlorhydria and an atonic stomach. Some people are born with achlorhydria and its attendant disadvantages. Again one type of man develops high blood pressure, while another type in like conditions develops low blood pressure. And so with the mind—its make-up both inherited and acquired may colour or even confuse the picture presented by a physical illness. The latter may release some buried or suppressed emotional experience which in its turn will produce further physical reactions. To effect a cure both aspects of the illness must be studied. This wider comprehension demanded of medicine may be set forth by an illustration:

Given a business man—efficient, impressionable, courageous: his parents brought him up in the cold shades of virtue and not in the sunshine of the understanding heart, so he had learnt repression, not self-expression. He gets overworked, loses confidence in himself, doubts the rightness of his calculations and decisions, suffers self-depreciation, anxiety, insomnia ; and all this hidden behind an outward appearance of carrying on cheerfully. At this point the stress may take effect in one of several directions. For instance, it may knock out the nervous system regulating the intestine: the diagnosis is "colitis"; he is satisfied—" Here is the cause of my troubles—a microbe in my intestine." If the microbe is not crushed very soon and the illness lingers, he is told he is " nervy"; this causes a pang of self-reproach ; he retires into his shell, his colitis gets worse, and he drags on until we hope he meets a doctor with a more comprehensive outlook.

Pervading these problems there is a fundamental error of thought—namely, that disturbances of your mind are under your control and are therefore your fault, whereas disturbances of your body are not under your control and are therefore your misfortune. This false doctrine of control, and all the perversions of the doctrine of free will with which it has long been entangled, are responsible for much faulty thinking and human suffering. Self-control can be bought too dearly or sought where it ill belongs.

And next as to treatment of these complex cases. Apart from remedies which are specific and those which assuage pain and assist relaxation and sleep, efficient treatment lies in comprehensive diagnosis. It is sometimes only necessary to explain an illness for the patient to cure himself. Let the doctor understand the component parts of the picture and explain faulty trends of thought and feeling and their relation to bodily function. Thus restoration of perspective and reassurance will follow and the patient will be put on the road towards health. True, the faults and errors may be too ingrained for remedy by a single readjustment ; then the treatment becomes educative, and needs the discerning mind, reasoning which is persuasive, and those further gifts of the teacher—the power to give from himself understanding and confidence, and this the more effectively because unwittingly. It is far easier to prescribe medicine than to give the patient healing.

Kinship between Medicine and Education

This increasing kinship between medicine and education leads to further reflections. Our public medical services and the various voluntary agencies which have the same objective should be judged even more by what they teach than by what they provide. The infant and child welfare clinics and the school medical services respond to this test. They have given parents not only help but vision of better things and have stimulated individual effort. And does not medicine teach this to be the touchstone of sound statecraft? Health like healing comes in last resort from

within. Stimulation and assistance from without—yes ; but such must not replace or outpace the integrating process within. If they do, there follows a negative phase of inertia and a paralysis of that individual endeavour on which depends the onward march of the organism. Has not latter-day statesmanship fallen into this error?

Ways and Means

There is now alike ability and desire to investigate illness in its early or potential stage, and this aim of constructive health has increasing support from the public. We see it on the preventive side in the work of the Industrial Health Board by means of which the misfitting of the worker to his task with its tale of ill-health and unhappiness is avoided or ameliorated ; stress of body and mind and the balance between effort and relaxation are studied, to the advantage of the work and the contentment of the worker. Many large firms have welfare organizations on similar lines.

Persisting deviations from fitness require investigation. Hospitals and clinics will be needed for every class of citizen. There investigations can be made and results marshalled and at less cost. Care will need to be taken that general practitioners do not become separated from their patients when the latter enter hospitals, for such would damage professional efficiency, to the disadvantage of the public.

When the nature of the defects is disclosed the mere giving of medicines will often accomplish but little. What the patient wants is regimen and re-education in methods of living ; treatment, it may be by diet, physicotherapy, and relaxation, under controlled observation. Such treatment or education of the man and his tissues might take several weeks, and in most instances it would be advantageous for such patients to continue their ordinary avocations. We need a new type of institution—distinct from hospital provision—namely, a Health Hostel. Examples flow from any physician's experience. Overweight—the man of 40 getting a fat body and a fat head, who avows himself a small eater yet is clogged with his own metabolic products ; the man becoming set about the neck and waist, who turns his body slowly rather than his head and eyes quickly, or who is bluish and breathless, losing his rib movements and wants to "stay put." Then the various gastro-intestinal victims who need to be taught how to eat, how to digest, and to regulate their bowels, and perhaps to be cured of their "conscious abdomens." Then again the patient in the early diabetic stage where not only himself but his wife needs instruction in food calories and cooking, and it may be in the administration of insulin. All such and many more need for a space a designed environment ; they require education but under the conditions of their working life. Such institutions must have a kitchen under a trained dietitian, and a physicotherapeutic department ; skilled control, but no cults or fads. It would prevent disease in untold measure and would be self-supporting and even profitable. The cost to the individual might where necessary be defrayed out of that comprehensive sickness insurance scheme which we wait long and wearily for the vision and constructive ability of the insurance companies to provide.

Education in Health

The good of the people demands education in matters of health. Would it not be possible for the medical faculty of a university to include among its functions the provision of approved health lectures when such are demanded by the districts within the area of its influence? In this way sound educational standards would be maintained—fads and fancies avoided. The objective of such teaching should be a knowledge of health with only incidental or illustrative reference to disease. The result would be great saving of illness and therefore in a few years of expense. Medical insurance costs employers, employed, and the State 36 millions of pounds a year. Not the least advantage of education would be to dissipate belief in the magical with its false gods, and to inculcate belief in the reign of law and its close pursuance as the only way:

> "Spells? Mistrust them.
> Mind is the spell which governs earth and heaven."

Research

Nature will not yield her secrets on demand, nor can discovery be bought. You can decide a path of inquiry but neither its end nor its exact direction. Our aim should be to secure the men—to enable those possessing the ability and while still young to live free of anxiety so as to seek out the secrets of Nature. The medical sciences are so embracing that their pursuit yields results beyond those of direct human application. I need only instance the study of genetics or that of virus disease. Take foot-and-mouth disease and diseases of potatoes and bananas. These concern not only our food but by their ravages involve the loss of vast sums of money.

In this country the quest for new knowledge is to be found in all and varied quarters, and a rich harvest is being gathered. The Medical Research Council is doing a great service in supporting and directing efforts wheresoever they come, and it maintains contacts between workers and between the institutions to which they belong. There is however need for further co-ordination among bodies which represent varied aspects of medical knowledge such as the basic sciences, medicine, surgery, obstetrics, education, and administration. It is a reproach against our profession that we do not establish means of giving collective advice when the art of government depends increasingly on our knowledge. Gods on Olympus, however wise, cannot in detachment represent collective authority. Corporate advice could be forthcoming only if there existed the means for its expression. To the hackneyed saying that "doctors always differ" let me reply that the vain repetition of error does not convert it into truth. In fact there is no sphere of learning in which consensus of opinion on matters of importance is so forthcoming as in that of medicine. Contrast with it for example economics or politics, and recall the confusion of tongues over the cure of our post-war afflictions—and it is an intellectual exercise and even a treat to hear one court of law upset the decision of another.

Conclusion

If we look back, what a panorama presents itself during the life of this Association ; and never was there greater promise that the advancing front of knowledge will "make one music as before, but vaster."

Pursuit of knowledge in the medical sciences not only brings results prolific of benefit to mankind, maybe by adding to life's quality or lightening the burden of suffering, but its very pursuit makes doctors of every nationality and clime into comrades who, animated by the same ideals, think and work together—the gold of endeavour without the alloy of conflict. Does not this distinguished gathering of guests, whom I am so proud and happy in your name to welcome, bear witness? Be it remembered, there burns in our temple not only the lamp of reason but the lamp of service. These together betoken the qualities of wisdom and the understanding heart, and that desire to know "who is my neighbour" which gives to life its savour and to humanity its hope and purpose.

THE PRIVATE PRACTITIONER AND PREVENTIVE MEDICINE*

BY

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Nothing is more difficult than to determine the beginning or the end of great events. All we can say to-day is that we have been the witnesses of the greatest epoch of advance in the science and art of medicine of which there is any record in the history of mankind. Not the fifth century B.C. in Greece, not the great thirteenth century in Europe, not the Renaissance itself, can show a similar acquisition of new knowledge and its application as occurred in the hundred years following 1832. We can say even more: in no previous age has there been such growth of the conception of preventive medicine.

I propose to offer for your consideration some illustrations of the pioneer part which the British medical practitioner has taken since 1832 in the grand historical progress of prevention in England. Before doing so, however, it is necessary to bear in mind the social background of his ideas and his labours. Since the Reform Bill this country has been undergoing a gradual transition of society towards democracy, accompanied by ever-widening humanity, education, and enfranchisement. It has reaped the harvest of the industrial revolution and its aftermath—its unequally shared but enormous wealth, its productive inventions, its urbanization, and its burden of physical impairment; human life has been rendered increasingly tolerable to a population rising to forty millions in an island where fourteen millions had found it hard to earn a livelihood before. This period has witnessed the results of the philanthropic effort of four generations to construct and inspire a vast edifice of State control by the people themselves, passing steadily from central to local government and from aristocratic to democratic institutions. It has seen a rapid development of intercommunication to and from all parts of the world, giving the people an altogether new sense of mobility, and exporting and importing ideas, deeds, and merchandise throughout mankind.

In addition, there have been two factors which have exerted an imponderable but dominant influence in changing the thoughts and conduct of the English people; first, the astounding expansion of science and the application of the scientific method; and, secondly, the slow but sure oncoming of collectivism and the co-operative habit, and the end of Individualism as a national polity. We live under conditions derived from the deductive logic of these events. Yet the medical man is an *individualist* and he is educated by an *inductive* method. It is hardly less surprising to discover that he has been slow to accommodate himself to such momentous transitions than it is to awaken to the fact that he himself has, all unconsciously, been a substantial contributor to this evolution. Without losing his individualism and by the way of induction he has been the builder of State medicine and has opened wide the gates of prevention.

When we reflect upon modern preventive medicine we naturally think of the change and improvement which has occurred in our external environment. We think of the great pioneers and their work for the provision of public and wholesome water supplies, for the isolation of the sick, the removal of nuisances, the reform of housing, drainage, sewerage and sewage treatment, the inspection of food, the Factory Acts, and vital statistics. Looking back we see what they did, and are more grateful than their contemporaries to Chadwick and Simon and Farr, to Bentham and the Mills, to Lord Grey, to Owen and Cobbett, to Lord Shaftesbury, and to the statesmen who took occasion by the hand. When we reflect again, our minds turn to the masters of physiology who illuminated the nineteenth century—to Helmholtz, Claude Bernard, and Carl Ludwig; they were followed by the masters of pathology, Virchow, Pasteur, and Koch. Perhaps we remember even the great clinicians who created and led professional opinion, Bright, Addison, and Hodgkin—the Guy's trinity—Gull and Jenner, Osler, Allbutt, and Barlow; and we wonder whether, after all, it is not the work of these eminent men which laid the foundations of prevention. Lastly, we are learning to see that preventive medicine owes an irredeemable debt to Edward Jenner, to the anaesthetists Morton and Simpson, to the antiseptic principles of Lister, to the discoverers of the causes of disease, such as Pasteur, Koch, and Manson, and to the "immunizators" who followed them.

But a house does not consist only of foundations or of corner-stones any more than an effective army consists only of generals and army council regulations. There is nothing more significant or more illuminating than the constructive service which has been rendered in this great story by medical practitioners. It is they who have made the bricks, found the road, explored the facts, carried on the fight, and educated the people in a way of life.

I submit for your consideration four illustrations. The eighteenth century practitioners provided the dynamic example, and proved themselves the enlightened followers of Mayerne, Glisson, and Sydenham, of Willis, Lower, and Mayow. What they did was really "prodigious," to use Sir Walter Scott's word. "Human experience, which is constantly contradicting theory, is," said Dr. Johnson, "the great test of truth," and it proved to be so in the wonderful and unexpected record of the endeavour of our eighteenth century forerunners. They searched into the circumstances of disease and related it to environment; they introduced medical notification and hospital isolation; by their investigation of factory conditions they initiated industrial welfare; they stemmed the rising tide of spirit drinking; they began the reformation of midwifery, and were the first to attack the problems of child sickness and mortality; they established dispensaries and staffed the new hospitals; their systematic support of vaccination instituted the practice of immunity; and their scientific observation was the beginning of British epidemiology. The medical practitioners of the nineteenth century followed their leadership, and entered a kingdom of which they had opened the doors.

CLINICAL WORK OF PRACTITIONERS

My first illustration is the clinical work of English practitioners since 1832, which consolidated the foundations of modern preventive medicine. Sir Humphry Davy, Beddoes, and Faraday had by experiment prepared the path for the early anaesthetists, Hickman, Collier, Warren, Morton, and Simpson, who in their daily practice established the effectiveness and safety of anaesthesia, thus making possible the rapid advance of surgery. It was in their clinical practice that A. P. Stewart of Glasgow differentiated typhoid from typhus; Sir Jonathan Hutchinson elucidated surgical pathology; Lister proved the validity of antisepsis; James Mackenzie undertook the intensive study of cardiac disease, the energy of the heart muscle, and the effect of digitalis on auricular fibrillation; Lauder Brunton evolved his therapeutics of the circulation; Thackrah elucidated the syndrome of brass-founders' ague, and dust diseases; and Sir Andrew Clark and Sir B. W. Richardson developed the place of personal hygiene in therapeutics and preventive medicine.

* Presidential Address to the Section of Public Health at the Centenary Meeting of the British Medical Association, London, 1932.

These were not primarily laboratory men ; they accomplished their work at the bedside and in the clinic. They followed in the footsteps of Fothergill, Huxham, Heberden, Withering, and John Hunter, but they possessed or invented instruments of precision beyond their teachers. Indeed, one of the particular services of the nineteenth century practitioners was the introduction of new means of measurement and methods of physical diagnosis.

Other men worked in different directions. Murchison differentiated fevers, Budd of Bristol indicated the means of preventing their spread and confirmed the infectious nature of typhoid and pulmonary tuberculosis, Greenhow of North Shields determined the cause of silicosis, Snow demonstrated the spread of cholera by water, Ballard in Islington began to formulate the causes of epidemic diarrhoea, Michael Taylor of Penrith first established the conveyance of typhoid by milk, Hugh Owen Thomas and Robert Jones laid the foundation of orthopaedics, Priestley Smith of Birmingham and Francis Warner began school medical inspection, and Scott has described the occupational cancer of paraffin workers. I name a score, but I could find a hundred medical practitioners who, within the century, have pioneered in extending the fields of preventive medicine. In every branch of medicine and in every county of England practitioners have placed their names permanently upon a roll of fame as preventive benefactors and explorers.

PRACTITIONER AS A MEDICAL OFFICER

My second illustration is to be found in the practitioner as a public health officer. When in 1887 Sir Henry Acland, the President of the General Medical Council, looked back fifty years this is what he had to say:

"Any system of medicine which should ignore duty to the masses as well as to the individual is now no medicine at all ; yet some here can recall the day when the prevention of disease was considered almost outside the province of an orthodox medical man."

But something happened, and it was this:

"The administration of the new Poor Law which had come into operation in 1834 directed the attention of the country, especially by its improved system of medical relief, to the insanitary condition and the terrible mortality which prevailed among the poorer labouring classes. These existed in towns and villages, in cellars and lodgings and cottages alike. The nation began to feel that moral as well as physical degradation resulted from unhealthy lives. *Medicine became preventive as well as curative. The general practitioners throughout the whole country became connected with a State system of organized medical observation and relief.* . . . A new conception of medicine had arisen throughout the English-speaking race."

These strong though forgotten words were not extravagant, for under the Poor Law of 1834 the parish doctor of a former day had been replaced by district medical officers, who were medical practitioners devoting part of their time to public duties. They covered the country completely, and their public duties for the poor were preventive and not only curative. Even the British Medical Association declared as early as 1837 that their responsibility embraced the whole of medicine:

"It should unite, therefore, an acute perception of the incipient stages of disease with well-directed efforts for its prevention, accompanied by the most diligent and scientific treatment."

We are all aware that the medical history of the Poor Law from 1832 to 1929 is a chequered history, and that neither doctor nor patient always received his due, but the fact remains that 3,700 medical practitioners were brought into the service of the State for the purposes of preventive medicine.

Yet this was not all. For when the Poor Law Commission began its work, Chadwick, its secretary, found it necessary to secure the services of three medical practitioners to travel through England with a view to investigating the magnitude of the problem of the sickness of the poor and formulating the means of its solution and non-recurrence. Dr. Neil Arnott, Dr. Southwood Smith, and Dr. James Kay were chosen, and their pioneering and constructive work was presented to Parliament in 1842 in Chadwick's monumental *Survey into the Sanitary Condition of the Labouring Classes of Great Britain*, which led to the Public Health Act of 1848 and the organization of the Public Health Service.

Following the example of the Poor Law Commission, the Board of Health of 1848 and the Privy Council in 1855 also called for the aid of medical practitioners in this new service from 1848 to 1865. I have a list of more than thirty of them who worked under Chadwick or Sir John Simon before permanent whole-time medical officers began to be appointed as civil servants (for supervision of vaccination in 1865 and for general purposes in 1869). For the first ten years of the official career of Sir John Simon he had no whole-time medical colleagues. He retained the services of practitioners, and his classic reports contain a record of their enduring work. In passing, I may remark that while Chadwick was the moving hand in the appointment of the Royal Commission of 1843, the still greater Royal Commission of 1869 was initiated by the British Medical Association at the instigation of Dr. Rumsey of Cheltenham. It was this Commission that proposed a Ministry of Health, which arrived fifty years later.

OFFICIAL DUTIES OF EVERY PRACTITIONER

Here we have the remarkable story of how the profession of medicine itself took a primary hand in suggesting the intervention of the State in preventive medicine. But it was not enough to choose a selected few medical practitioners to be the public exponents of preventive medicine, as it was not enough to appoint medical officers of health from 1847 onwards. I turn naturally to my third illustration in the action of the State in imposing upon *every* registered medical practitioner definite statutory duties in regard to prevention. This began in 1858 with the Medical Act, and has continued to the present day. No practitioner can escape ; he may like or dislike preventive medicine, but he is required by law to fulfil its obligations. For instance, every medical practitioner must certify birth and the cause of death, must notify cases of infectious diseases, be skilled in vaccination, and in the diagnosis of mental disorders. There are no fewer than forty Acts of Parliament which prescribe the powers and duties exercisable by every medical practitioner in regard to inspection, examination, certification, ascertainment, diagnosis, compensation, insurance, industrial poisoning, dangerous drugs, and childbirth, every one of them with a view to the practice of preventive medicine.

THE PRACTITIONER IN INSURANCE PRACTICE

My fourth illustration is concerned with national health insurance. Here is the latest form of the contract practice which originated in the eighteenth century, and by which the practitioner provided, at reduced fees, medical treatment for those immediately above the pauper class by means of "sick clubs," managed by lay associations in the interest of their members. The health provisions of the Insurance Act of 1911 were passed by Parliament for the prevention of disease as well as for its treatment. A moment's reflection will make apparent its preventive value ; 15,000 medical practitioners have voluntarily joined in a co-operative scheme of the profession, the friendly societies, and the State for the medical supervision of

fifteen million people, more than a third of the whole population, inclusive of the wage earners of the country. These insured persons come to their chosen doctor, frequently and undeterred, at the beginning of sickness, when disease may be most effectually controlled. The scheme provides for medical advice and medicines, for prevention and treatment within the scope of the practitioner's skill, and for rest during incapacity. It actually furnishes these advantages to some seven million persons annually.

For the profession, too, the arrangement has its convenience: no bills, no accounting, no collection of fees, no bad debts, and adequate professional safeguards—a very different situation from the old club practice. In addition to the direct advantages of the scheme, it provides an inducement to the medical practitioner to keep his patient well. It cannot be doubted that such a system is preventive of disease. The early detection of tuberculosis, of infectious disease, of rheumatism, dyspepsia, bronchitis, renal disease, anaemia, and minor maladies in a vast number of persons every year, contributes substantially to prevention; medical advice on personal hygiene operates in a similar way. Of fifty million approved prescriptions many at least ought to be preventive in effect; periods of rest during incapacity are conducive to prevention as well as healing; and the additional benefits for dental and ophthalmic treatment, for appliances, nursing, and convalescence are preventive in purpose and result. I have no doubt that health insurance is one of the most effective instruments of preventive medicine which we possess.

The criticism which is sometimes heard, that a "gulf" exists between preventive medicine and curative medicine, is not, in practice, substantial, nor can it be sustained; the two are not separable. All conditions and forms of healing, whether medical, surgical, or dental, are preventive in educational value and in the avoidance of worse ills; they postpone the event of death. Nor is there a gulf between ordinary clinical practice and State medical services. They are complementary, interdependent, and in a civilized community essential to each other. Public health activities are a natural and inescapable product of the practice of medicine, and began in England after the Black Death in 1349. Of course, there have been misunderstandings, generally due to misapprehension or lack of information, which are now happily disappearing. The British Medical Association itself has declared that "as social systems become more complex, corresponding changes in the conditions in which the medical profession does its work are inevitable."

In conclusion, let me remind you that the Association from 1833 to the present year has been engaged, in ever-increasing degree and volume, in the fundamental work of preventive medicine. In 1833 it began its unfaltering adherence to the practice of vaccination and established methods of immunity, and to insistence upon the accurate and universal certification of the cause of death, two far-reaching principles which have exerted profound and enduring influence, not only in England, but throughout the world. In 1835 it gave support to, and furnished safeguards for, the creation of the Poor Law Medical Service, and in 1847 it began its consistent advocacy of a Public Health Service. Since 1858 it has steadily upheld the Medical Act and its amending successors, and has claimed, and assisted in securing, adequate training and fair dealing for the registered medical man, the midwife, and the public health officer. It has been a great thing for England and for English medicine that its principal association of medical practitioners should stand for the high competency and the strict integrity of the medical profession, and be strenuously opposed to every kind of subterfuge. The foundation of any medical service, private or public, must be the medical practitioner. He is its anchor, its pivot, its instrument. If he be competent and trustworthy, it has its first surety of efficiency; if he be ill-equipped, ineffective, or unreliable, it must fail. In securing and encouraging him, in husbanding his resources, and safeguarding him in the discharge of his public and private duty, the Association renders invaluable aid to preventive medicine.

REMOVAL OF THE PROSTATE

INDICATIONS AND METHODS*

BY

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INDICATIONS FOR PROSTATECTOMY

The most important indication for removal of the prostate is obstruction. In most cases the retained urine is not infected, but occasionally infection is present, therefore these cases must be considered separately.

Operation is indicated for aseptic retention (1) where there is complete permanent retention, (2) where intermittent attacks of retention alternate with periods of being able to pass urine, (3) in cases of chronic vesical distension with overflow dribbling, and (4) in cases in which there is more than fifteen ounces of residual urine. These conditions are always a definite indication for operation irrespective of the age of the patient.

Should the obstruction be in an earlier stage, the patient's age may be considered when discussing the advisability of prostatectomy. A slight but progressive amount of retention would indicate operation in a well-preserved man of 60, but not in a debilitated patient of 75 or 80. If the patient is comparatively young and healthy, one should not wait for the development of serious or dangerous symptoms, but should advise an early operation if the obstruction is progressing. It is far better to operate early on such cases than to wait till their renal function is impaired. At the same time one should be certain that the amount of obstruction is increasing before advising an early operation, and I usually advise the patient to return in about six months to see if his residual urine has increased. I advise prostatectomy in a man of 60 who has more than two ounces of residual urine, or in a man of 70 with more than from four to six ounces. If the patient is over 75, I do not suggest operating for anything less than ten to fifteen ounces of residual urine.

If the urine is infected, the conditions are entirely altered. Infection is usually the result of instrumentation, but occasionally one finds pus and organisms in it before a catheter has been passed. Spontaneous pyuria is, as a rule, due to complication such as stone. It may also be the first sign of a vesical neoplasm. A new growth of the bladder does not bleed so easily where residual urine is present, as the residual urine acts as a cushion, which protects the growth from injury during micturition. Spontaneous pyuria is much more common in malignant than in benign growths of the bladder; it is therefore an urgent indication for cystoscopy.

If the patient has been catheterized and has become infected, it is impossible to cure the cystitis while there is residual urine; also there is always the risk of the infection spreading up to the kidneys. I believe that in most cases the kidneys become involved through a direct convection of infected urine up the ureter. In many cases the vesical orifice of the ureter becomes incompetent and fluid injected

* Read in opening a discussion in the Section of Surgery at the Centenary Meeting of the British Medical Association, London, 1932.

into the bladder finds its way into the ureters. This condition is often observed in cystograms. In extreme cases the opaque fluid injected into the bladder ascends both ureters up to the level of the renal pelves. Even when the vesical orifice of the ureter is competent, one may have this form of ascending infection. A patient with an infected bladder usually has more or less vesical tenesmus and frequently strains to pass water. If a peristaltic wave occurs in the ureter when the intravesical pressure is raised, fluid may regurgitate from the bladder into the ureter at the moment when the orifice of the latter is open. A prostatic patient with cystitis therefore runs a constant risk of ascending renal infection.

If a patient with an enlarged prostate needs an open operation on his bladder, the suprapubic sinus will not close so long as the obstruction persists. One must therefore remove the prostate in order to allow the sinus to close. Hence the presence of a vesical calculus is an indication for prostatectomy. Before this operation was introduced, one crushed the stone in prostatic cases rather than give the patient the discomfort of a permanent suprapubic fistula. The operation was very difficult, as fragments of the calculus became lodged in the post-prostatic pouch, where they could not be grasped by the lithotrite and from which it was impossible to evacuate them. The operation was incomplete, and numerous fragments of the stone were left behind. On looking up the records at St. Peter's Hospital for the closing years of last century, I found that many patients had been operated on repeatedly for vesical calculus, some of them ten or twelve times. After the introduction of prostatectomy these repeated litholopaxies ceased. Before this the surgeon never cared to open the bladder of a prostatic case ; now a vesical calculus is considered a definite indication for prostatectomy.

A vesical diverticulum is occasionally found associated with prostatic enlargement. If the gland only is removed the patient still has a considerable amount of residual urine due to the vesical pouch, the contents of which usually become infected and cause the formation of stones. The ideal operation is to remove both the pouch and the prostate at the same time, but should the patient be unfit to stand the double operation, it is best to remove the diverticulum first and drain the bladder until the prostate can be enucleated. The results of this double operation are usually very successful.

If a prostatic patient has a new growth in his bladder, the latter condition is the more serious and urgent. A benign papilloma is best treated by open diathermy. The bladder is drained for about a fortnight and the prostate then enucleated. Occasionally I have destroyed the growth and enucleated the prostate at the same sitting, but there is always a risk that tumour cells may become implanted in the prostatic bed and cause a recurrence there. This complication happened once, and I had great difficulty in treating the recurrent tumour, but was ultimately able to fulgurate it through a posterior urethroscope. When treating these growths by open diathermy I am always careful to destroy the whole growths, and not merely to cut through the pedicle with the diathermy knife. This diminishes the risk of implantation, as all the neoplastic cells are destroyed. If the patient has only a small amount of residual urine the growth should be destroyed by cystoscopic fulguration and his condition then examined to see if prostatectomy is required. In many cases a vesical papilloma gives rise to a certain amount of residual urine, and the surgeon may be doubtful at first as to whether the obstruction is due to the growth or to the prostate.

When an enlarged prostate is complicated by a malignant tumour of the bladder, the latter, of course, takes precedence. If the growth is so extensive that it cannot be removed, or if a total cystectomy is necessary, the question of prostatectomy does not arise. In the former case the obstruction is relieved by suprapubic drainage, and in the latter the ureters are implanted into the bowel. It is therefore only when a partial cystectomy is indicated that the need of a subsequent prostatectomy comes into question. The growth should always be removed first, unless it is situated near the apex of the bladder, and excision is a comparatively simple matter, when it may be possible to do both operations at the same time. Growths at the base or lateral walls of the bladder require a more prolonged and extensive dissection, and in these cases it is inadvisable to remove the prostate until the wound at the bladder base has completely healed. The bladder must, of course, be kept drained during the intervals between the two procedures.

CONTRAINDICATIONS

There are remarkably few contraindications to prostatectomy. Many patients who at first appear to be unable to survive any surgical intervention improve enormously under catheter drainage. Suprapubic cystotomy may then be performed and the patient watched until he is fit to undergo prostatectomy. It is extraordinary how well these old men stand the operation if they are given time to eliminate the accumulation of nitrogenous waste.

Chronic bronchitis naturally contraindicates inhalation anaesthesia, but many of these patients can be operated on with comparative safety under spinal analgesia. They, however, require a considerable amount of pre-operative treatment. They should do deep breathing exercises, and be shown how to make full use of their intercostal muscles in respiration. The amount of the bronchial secretion should be diminished by small doses of atropine, and, at the same time, the heart should be stimulated with digitalis. After the operation one should stimulate the respiratory centre by inhalation of carbon dioxide in oxygen (5 per cent.). This increases the depth of respiration and helps to get rid of the bronchial secretion. I consider the state of the heart more important than that of the lungs, and would operate on a bronchitic patient, provided that his heart was in good condition.

Cardiac Lesions.—Compensated valvular disease is not a contraindication to prostatectomy, but one would do everything possible to spare the heart muscle in such cases. If signs of circulatory failure, such as oedema and venous congestion, clear up with rest in bed and appropriate treatment, one might operate if the patient's kidneys were in a satisfactory condition. Degeneration or weakness of the heart muscle is by far the most serious complication. It is always necessary to maintain a systolic pressure of at least 100 mg. of mercury during convalescence, and if the pressure falls after operation, it is exceedingly difficult to restore it again. The fall of blood pressure not only affects the whole body, but is specially injurious to the renal function. If we accept the " filtration-absorption " of urinary excretion, it is obvious that the " filtration pressure " is a function of general blood pressure, and is dependent on the work done by the heart. The " kidney filter " cannot act if the blood pressure falls. In this case the amount of urine is diminished, and at the same time the waste products of metabolism accumulate in the blood. The maintenance of the systemic blood pressure is therefore essential to the recovery of the patient. If the heart muscle is considered incapable of keeping up the requisite pressure in the arteries, an operation should not be performed.

Old age by itself is not a contraindication to prostatectomy. I have operated on three patients over 90. However, repair is usually slower in these cases and they are liable to develop complications, especially pulmonary complications. One is often told that it is not worth while operating on extremely old men, and that it would be kinder to put them on catheter life. My experience is that if a patient over 80 is fit to undergo the operation, he will have a comparatively long period of survival after it. The average duration of life after operation in eighteen patients over 80 was four and a half years. If a man over 80 has a sound heart and

lungs, it is probable that he will survive for a considerable time, and if his urinary symptoms are urgent I think one should do the operation.

Renal Failure.—An unrelieved prostatic patient usually dies from renal failure, and patients with symptoms of renal insufficiency require immediate relief from their urinary obstruction. Unfortunately this condition does not cause symptoms until the tissue of the kidneys is damaged or the renal function is severely injured by retained toxins. The clinical signs of impending renal failure are: thirst, dryness of the mouth and fauces, a dry glazed tongue, headache, sleepiness, mental apathy and dullness, a dry harsh skin, distaste for food, and constipation. Persistent hiccup and refusal to take fluids are later signs. At the same time it must be remembered that considerable damage may have been done to the kidneys before any of these signs appear. Renal failure is an indication that the obstruction must be relieved, and it is only a contraindication to prostatectomy when it is obvious that the patient is not in a fit state to stand any operation.

In this discussion of the indications for prostatectomy, there has been no mention of the size of the gland. Provided that it is not malignant, there is no need to do so, as one operates for the relief of obstruction and not because the gland is enlarged. The amount of obstruction is quite independent of the size of the gland. A small prostate should be removed if it is causing marked obstruction, while a large gland may safely be left if there is little or no residual urine.

EXAMINATION OF PATIENT

It is unnecessary to describe the routine examination of the patient; I need only point out that it must be thorough. One not only investigates the state of his urinary organs, but that of his heart and lungs, and digestive and central nervous systems. One watches carefully for weak points unsuspected by the patient or undiagnosed by his doctor.

An over-distended bladder should not be emptied until the patient is put to bed, and one should never draw off more than about fifteen ounces of urine from an ambulatory patient. Cystoscopy is best postponed until the patient is on the operating table, but the bladder should be examined before it is opened in case there is unsuspected carcinoma or diverticulum.

The examination of the renal function can only be carried out when the patient is in a hospital or nursing home. This examination goes hand-in-hand with the preparation of the patient for operation, and I shall describe both together.

When a patient is admitted for operation a catheter is passed and tied in. If the residual urine is less than fifteen ounces the bladder may be emptied completely, but if it is more than this amount, fifteen ounces may be drawn off, and a spigot inserted into the end of the catheter. Five ounces are then drawn off every hour till the bladder is emptied. Once the bladder of a prostatic patient is completely emptied it must never be allowed to fill again. It should be drained continuously until the operation is performed, as this diminishes the risk of an ascending infection. An over-distended bladder may require slow drainage for three or four days before it is completely emptied.

At the same time, the patient is given as much fluid as possible. The intake and the urinary output are both measured, and one endeavours to force the output up to 100 ounces a day. If the excretion of urine closely follows the amount of fluids administered, it is a sign that the kidneys are in a good condition, but any discrepancy between the figures for the intake and output is a danger signal. One occasionally finds that the diuresis is delayed, or does not occur at all. Both these are bad signs, but the latter is worse than the former.

Estimation of the blood urea gives exceedingly valuable information, but in many cases it is of a negative character. A high blood urea indicates retention of nitrogenous waste, but a normal figure does not necessarily show that the kidneys are efficient. The figure may be reduced by keeping the patient on a low protein diet or by washing out the kidneys with large quantities of fluid. On the other hand, a rapid fall in the amount of blood urea under diuretic treatment is a hopeful sign, as it indicates that there is sufficient kidney substance to carry away the waste, provided sufficient liquid is supplied. On the whole, estimation of the blood urea often shows that operation is contraindicated, but it never tells us that the prostate may be safely removed. This information can only be obtained when it is used in conjunction with other tests.

The most useful test applied to the urine is the urea concentration test. The patient is given 15 grams of urea dissolved in 100 c.cm. of water, and the percentage of urea in the urine passed during the second and third hours after the draught is estimated. It is usually stated that a concentration of 2 to 2.5 per cent. of urea in each of these specimens indicates that the kidneys are working efficiently. MacLean and de Wesselow advise that the intake of fluid should be reduced to a minimum for twelve hours preceding the test, as a satisfactory concentration is not obtained if the patient is passing a large quantity of urine. When dealing with cases of prostatic obstruction it is, in my opinion, inadvisable to restrict the intake of fluid too much, as these patients always require a considerable amount of water in order to eliminate the nitrogenous waste. I now place less reliance on the actual percentage of urea in the specimens than on the quantity of this substance that is eliminated during each of the second and third hours after a urea draught. The quantity of urine excreted in each of these hours is therefore measured and the total amount of urea eliminated is calculated. No matter how high the concentration may be, the response to the test must be considered bad unless more than one-tenth of the original dose of urea is eliminated in each hour. A patient who gives a low concentration but eliminates a large quantity of fluid can usually be operated upon with safety, provided the intake of fluid can be maintained during the convalescence. I have not had a death from uraemia following prostatectomy in any case where the elimination of urea was more than 1.5 grams (that it, one-tenth of the dose) in each hour, but I have seen fatal post-operative suppression when the amount of urea eliminated fell below this limit, even though the concentration was over 2 per cent.

For example, I consider the following figures represent a perfectly satisfactory test:

	Quantity	Percentage of urea	Quantity of urea
2nd hour... ...	165 c.cm.	..... 1.3	2.1 grams
3rd hour... ...	125 c.cm.	..... 1.6	1.9 grams

Whereas the following is distinctly bad:

	Quantity	Percentage of urea	Quantity of urea
2nd hour... ...	75 c.cm.	..... 1.7	1.27 grams
3rd hour... ...	65 c.cm.	..... 2.0	1.3 grams

If the patient is not considered fit to undergo prostatectomy after about ten days' preliminary treatment with catheter drainage and forced fluids, a preliminary cystotomy should be performed. It is also necessary where the bladder is grossly infected. These are the principal indications for a two-stage operation. It should never be performed as a routine. It should be reserved for patients who are badly infected, or who do not recover rapidly from the effects of their urinary obstruction. Catheter drainage cannot be satisfactorily maintained for more than ten days, which is my reason for placing this limit on the duration of the preliminary treatment.

It is often said that infection is less liable to follow suprapubic than catheter drainage. With Dukes's apparatus the risk of infection with an indwelling catheter is greatly diminished, and I believe it is now less than with a suprapubic tube. Shock and haemorrhage are not diminished by operating in two stages, while the duration of the patient's stay in hospital is considerably increased. A two-stage operation is performed in about 15 per cent. of the cases in St. Peter's Hospital, and in about 5 per cent. of my private cases. If, however, it is necessary to

perform a preliminary cystotomy, one should postpone the second stage as long as possible, and, when feasible, send the patient away during the interval, for change of air.

SUPRAPUBIC PROSTATECTOMY: THE OPEN OPERATION

The incision extends in the middle line from the upper border of the pubes to the umbilicus. The recti are separated and the anterior wall of the bladder is exposed and denuded of fat. I try not to disturb the fatty tissue in the space of Retzius, as if it is removed the bladder tends to become adherent to the bone, which prevents the sinus from closing rapidly. The bladder can be opened either when distended with fluid or when empty. If it is distended with fluid the muscular tissue is caught in two pairs of tissue forceps placed one on either side of the middle line. The bladder wall is then opened by a stab about the level of the upper border of the pubes. The wound is immediately closed by the finger, and the fluid is allowed to drain away through a catheter. In this way soiling of the abdominal wound is avoided. As soon as the bladder is completely emptied, the incision is prolonged upwards for about two inches. Some surgeons open the bladder when it is empty. In this case the tissue forceps are applied so as to raise up the transverse ridge of the bladder wall, which is incised layer by layer. A traction suture is then put on either side of the wound and the interior of the bladder is explored with the finger, paying particular attention to the size of the intravesical projection and the condition of the internal meatus.

Freyer commenced the enucleation at the highest point of the intravesical projection, but as this method fails when the prostate lies entirely outside the bladder, I prefer to insert a finger into the internal meatus and to press it forward towards the back of the pubes. The internal sphincter will then be felt as a sharp ridge, and pressure immediately below this tears through the mucous membrane of the urethra and brings one automatically into the plane of cleavage. The finger is swept round the side of the internal meatus next the operator, keeping the pulp that directs it towards the sheath of the gland, but taking care not to penetrate too deeply. By this method the vesical mucous membrane is torn immediately over the line of the internal sphincter. Having accomplished this on one side the surgeon returns to the spot where he commenced enucleation, and proceeds to tear through the mucous membrane of the opposite side of the meatus. He then makes certain that the mucous membrane behind the internal meatus is completely divided, and that he has made a circular trench between the internal sphincter and the prostate. If he does not divide the mucous membrane posteriorly before proceeding with the deeper part of the enucleation, he will find that the prostate still remains attached to the posterior lip of the internal meatus, from which it can only be separated with the scissors.

Having torn a furrow round the internal meatus, the surgeon proceeds to deepen it by sweeping the finger round the prostate first on one side and then on the other. It is important to keep in the same plane of cleavage throughout. An adenomatous prostate enucleates quite easily, and no undue force is required. The enucleation is carried on at equal depth on all sides of the prostate until the lower portion of the prostatic urethra is encountered. This usually gives without difficulty, but if it feels like a strong band holding the prostate in place, it should be cautiously divided by a sawing motion of the finger-tip, keeping as close as possible to the prostate. If one tries to divide the urethra by pulling on the gland, one is liable to tear it too low down, and a cuff of the mucous membrane comes away with the gland. The division of the urethra is the only stage of the enucleation in which it is advisable to press against the prostate itself. The entire enucleation is carried out with the gloved hand. The old idea of scratching through the mucous membrane with the finger-nail has been abandoned.

As soon as the gland in enucleated, the patient is placed in the Trendelenburg position and bladder retractors are inserted. A careful search is made for partially detached tags or shreds of material which will slough if left in place. A few of these are formed by the mucous membrane surrounding the internal meatus, which may be irregularly torn, but most of them come from outlying portions of the gland. The latter are more numerous and the larger, and as they lie entirely within the cavity from which the prostate has been enucleated they may easily escape notice. Any tags found are removed by means of scissors or forceps. The surgeon next turns to the orifice of communication between the bladder and the prostatic cavity, which should be rendered as wide as possible by cutting out a V-shaped mass of tissue from its posterior margin. The floor of the bladder overhangs the prostatic cavity at this point and forms a " shelf," which it is advisable to destroy. If the gland is very large, the orifice is widely dilated and the " shelf " is faintly marked, but when dealing with smaller glands, and especially when dealing with glands that lie almost entirely outside the bladder, the orifice is small and the greater part of the cavity lies under the floor of the bladder. In these cases it is most important to destroy the continuity of the internal sphincter in order to prevent recontraction. If the internal sphincter contracts again after prostatectomy, it has the effect of making the " shelf " broader. The anterior part of the sheath is fixed in position by the pubo-prostatic ligaments. If the sphincter recontracts it must do so from behind forwards, so that the position of the orifice of communication between the bladder and the prostatic cavity is displaced anteriorly until it lies close under the pubes. The result is that a catheter introduced into the urethra impinges against the under surface of the " shelf " behind the internal meatus, and it may be impossible to guide it into the bladder. At the same time there is increasing difficulty of micturition, which may necessitate another operation for its relief. This is why one cuts a segment out of the internal sphincter during operation.

The control of haemorrhage is the most important part of this stage of the operation. It is very usual to find two small arteries spurting when the internal meatus is examined. They lie on either side of the orifice about its middle, and can occasionally be seen on the free edge, but more often lie immediately under it, so that the vessel itself only becomes visible when the edge is turned back. These vessels should be caught and ligatured or else controlled by means of a stitch. There may also be a certain amount of bleeding from the V that has been cut out of the posterior lip. As a rule, I put a line of haemostatic sutures round the posterior two-thirds of the orifice. I use continuous sutures, placing a " back-stitch " in the middle line posteriorly in order to prevent them acting as a purse string. This line of sutures usually controls all the bleeding from the edge of the orifice. I have never seen any definite haemorrhage from the anterior third of the orifice, but if an abnormally placed vessel is bleeding in this locality it can always be caught up with a stitch. When the sutures have been inserted there may still be a slight amount of oozing from the deeper part of the prostatic cavity. A firm pack is placed in the cavity and held there for about three or four minutes. This stops it completely, and it seldom recurs when the pack is removed. If it does, a light pack is left in the cavity for forty-eight hours. The bladder is swabbed free from blood, the retractor is removed, and the lower two-thirds of the bladder incision is closed by a continuous suture. A Marion's tube is placed in the upper angle, and the bladder is allowed to drop back into the pelvis. The tube should be gripped by the bladder wall so as to reduce the leakage to a minimum. If necessary, one or two stitches can be placed above it. The abdominal wound is then closed in the ordinary manner. I do not think it necessary to drain the space of Retzius, but if the surgeon is anxious about leakage round the tube he may insert a small drain down to the anterior wall of the bladder. When a plug is left in the prostatic cavity, which is only necessary in about 5 per cent. of cases, it comes through the bladder incision immediately below the tube. In these cases there may be a slight amount of leakage when the gauze is removed, but by this time the space of Retzius has become sealed off and urine does not collect in it.

So far I have assumed that the prostate has been of the ordinary adenomatous type, but when dealing with small fibrous glands one has to adopt a slightly different procedure. These glands lie entirely outside the bladder, so that the enucleation must be carried out from the urethra. In addition, the internal meatus is usually fibrous, and it may be difficult or even impossible to dilate it with the finger. In this case the bladder retractor should be inserted and a small incision made through the sphincteric ring with the point of the knife. It is immaterial in which direction this incision is made, but I usually make it anteriorly, as it then leads directly to the point where enucleation is commenced. The incision need not be more than a quarter of an inch deep. The finger is then inserted into the urethra and the plane of cleavage is found immediately under the floor of the bladder. It is usually supposed to be extremely difficult to enucleate prostates of this type, but I have never found it so. The prostate appears to peel off from the inner surface of the sheath and soon is completely detached from it, except in the apex, where it is held by the urethra. It is advisable not to attempt to tear through the urethra, as by so doing one may easily remove too much of it. The patient should be placed in the Trendelenburg position and the bladder retractor reinserted. The prostate is caught in a pair of dissecting forceps and pulled upwards, while the urethra is divided at its apex by means of a long pair of scissors curved on the flat. In removing these small glands it is most important to cut as large a V as possible from the posterior lip of the internal meatus. If this is not done secondary recontraction is very apt to occur. The bleeding is usually slight and easily controlled by a few stitches.

AFTER-TREATMENT

The Marion's tube inserted at the time of the operation is left in the bladder for four days. The urine drains into a bottle placed between the patient's thighs and held in position by a knee pillow. This is, I think, more satisfactory than drainage into a vessel placed on the floor, as the long tube easily becomes kinked by movement. On the fifth day the Marion's tube is replaced by a number 34 to 36 White's pattern de Pezzer tube, which is left in position for a week. When this is removed, about the eleventh or twelfth day, a catheter is tied into the urethra, where it remains until the suprapubic sinus is healed. During the time that the bladder is drained, whether by a tube or a catheter, it is irrigated twice a day with two pints of solution of nitrate of silver (1 in 10,000). The front of the abdomen is painted over with 2 per cent. solution of picric acid in spirit, either every day or every second day.

I believe that frequent irrigation is the only method of keeping the bladder and the prostatic cavity free from infection. Its action is largely mechanical, as blood clots and debris, in which organisms can multiply, are washed away. Suction may keep the wound dry, but it is exceedingly difficult to remove solid particles in this manner. I prefer to keep the suprapubic sinus open for a fortnight after the operation. So long as the bladder is efficiently drained the pressure in it is kept at zero. If the intravesical pressure rises there is a risk of secondary haemorrhage. This usually occurs when the drainage tube is removed early, or when it is allowed to become kinked or blocked. The fistula closes three or four days after the suprapubic tube has been removed, and by this time the risk of secondary haemorrhage has passed.

One rarely finds that the closure of the fistula is delayed beyond the third week. The most common causes for delayed healing are (1) sepsis, (2) adhesions between the bladder and the pubes, (3) recurrent obstruction at the vesical orifice, and (4) hernia of the bladder wall through the fistula. The last condition is more usual since patients have been placed in the Fowler position than when they were kept flat until the wound was healed. If the sinus is not healed at the end of four or five weeks I usually dissect it out, free the bladder from adhesions, and examine the state of the internal meatus. In many cases it shows signs of commencing recontraction. The opening is enlarged with the finger, a catheter is tied in, and the bladder sutured completely. The abdominal wound is closed round a small tube placed in the space of Retzius. This method undoubtedly saves time, as the delay in healing is evidence that there is something which prevents the bladder from emptying, and which, if unrelieved, may result in a permanent fistula.

OTHER METHODS

The method I have described was introduced by Sir John Thomson-Walker in 1919, and in my opinion gives the best results. The success of suprapubic prostatectomy depends largely on free communication between the bladder and the prostatic cavity ; in fact, the latter should be considered as a portion of the former. The patient depends entirely on the compressor urethrae for his sphincteric control, and this muscle is quite sufficient for the purpose.

When a perineal prostatectomy is performed the compressor may be damaged during the operation or its muscular fibres may be entangled in the scar. For this reason surgeons who practise perineal prostatectomy endeavour to restore the function of the internal sphincter in order to prevent incontinence. In this they are rarely successful, because if the prostate is at all large the internal sphincter is so stretched that it cannot recover, and if the prostate is small and fibrous the sphincter itself is transformed into a fibrous ring.

Some operators—for example, Harris—endeavour to narrow the opening between the bladder and the prostatic cavity, and also to cover a portion of the raw area in the latter by bringing down a flap of mucous membrane from the bladder. I agree with Sir John Thomson-Walker that it is advisable to leave the opening between these two cavities as wide as possible, as by this means the best functional results are obtained. About ten years ago I tried to reduce the size of the raw area in the prostatic cavity by bringing down flaps of mucous membrane derived from the covering of the intravesical projection of the prostate, but I gave up doing so. The flap either sloughed or tended to occlude the internal meatus, and the results were not good. The prostatic cavity always becomes infected, and is unsuited for plastic operations. It rapidly contracts after operation, and generally becomes covered with epithelium derived either from the base of the bladder or from the urethra.

THE SEQUELAE OF PROSTATECTOMY*

BY

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In this short time at my disposal, I think it will be best to concentrate on one or two of the various sequelae that may bother the surgeon in the latter stages of a prostatic's convalescence.

NON-CLOSURE OF WOUND

Failure of the suprapubic wound to close may be partial or complete ; that is to say, the sinus may remain persistently open, or else, having closed for a period, may again become patent, so that the patient who has tasted the joys of micturating normally suffers the disappointment of seeing himself back again in a state which appears to him little different from that which existed a week or so after his operation. A persistent suprapubic sinus, although it cannot be regarded as a common sequel of prostatectomy, is such an annoying one to doctor and patient alike that it is worthy of our attention.

* Read in opening a discussion in the Section of Surgery at the Centenary Meeting of the British Medical Association, London, 1932.

The factors that may determine its occurrence are (1) persistent sepsis, (2) the presence of an obstruction to the passage of urine, and (3) adherence of the vesical wall to the abdominal wound with (in extreme cases) hernia of the bladder through it. One alone of these factors is sufficient to prevent closure of the suprapubic sinus, but not infrequently two are combined—more especially persistent sepsis associated with a certain degree of post-prostatectomy obstruction. It will be more convenient, however, to consider each factor separately.

PERSISTENT SEPSIS

At one time surgeons accepted as inevitable the fact that prostatectomy was a septic operation, but to-day we are all striving to remove this stigma from prostatic surgery. The infection which we have to combat may have antedated the operation or it may have followed it. Where the patient already has an infected bladder when first seen, he will require preliminary drainage either through an in-dwelling catheter or a preliminary cystotomy wound. Surgeons differ in their partiality for one or other of these two pre-operative methods, and I myself, when confronted by a severe cystitis previous to operation, am becoming more and more inclined to deal with it by preliminary cystotomy rather than by catheter drainage.

Post-operative infection is encouraged by the tags, shreds of mucous membrane and partly detached nodules of the prostatic gland, that are left behind after enucleation. Although by the open operation the amount of this damaged tissue is materially reduced, it cannot be entirely eliminated. Our efforts to deal with the infection that almost inevitably follows by irrigating through the suprapubic tube can only be partially successful, since the prostatic cavity is so low in position that irrigating fluids do not penetrate to this region of maximum sepsis. The fact that during the first forty-eight hours after operation the urine is usually soaked up into voluminous dressings and layers of wool encourages infection. So also does the introduction of foreign bodies like haemostatic bags and packing. Whilst all these factors make for sepsis in the earlier stages of a convalescence, during the later stages this is more likely to be kept up by such complications as an infected vesicle. The fact that secondary epididymitis is so common a sequel to prostatectomy is an indication of the almost inevitable existence of a primary vesiculitis. Finally, the sepsis may be maintained by the existence of dead spaces either within or without the bladder ; in other words, of vesical saccules and of pockets behind the pubis. It is the presence of these persistent foci that is responsible for the periodic flare-up of inflammation in the suprapubic scar and the reopening of the sinus.

Preventive treatment consists in preliminary drainage in septic cases, in eliminating, at the time of operation so far as is possible (and when possible), damaged tissue in the region of the prostatic capsule, and in careful aseptic handling of the wound after operation. When, in spite of these measures, severe infection has occurred, it must be combated by satisfactory drainage and by efficient irrigation of the infected area. If the chief focus of infection is an infected vesicle, vesicular massage should be carried on. For the cure of a few cases a vesiculectomy may even become necessary.

It would take too long to discuss the question of the drainage of the prostatic cavity by means of an in-dwelling catheter, the indications for the performance of the open operation, and the treatment of such complications as bladder diverticula and suppurative vesiculitis. All that it is necessary to emphasize is that persistent sepsis is the most common cause of persistent suprapubic sinus, and that if this disappointing failure in healing is to be avoided we must do all that is in our power to combat it.

POST-OPERATIVE OBSTRUCTION

This may be complete or incomplete: in other words, the patient may be able to void a small amount of urine, or the urethra may offer obstruction not only to the passage of urine but also to the introduction of a bougie. Sir John Thomson-Walker, in his Lettsomian lectures of 1927, stated that in sixty-six out of sixty-nine cases of post-prostatectomy obstruction coming under his notice the obstruction was situated at the outlet of the bladder, where the mucous membrane had been torn across. In my own experience, although I agree that this is the commonest situation of a post-prostatectomy obstruction, I have found a somewhat larger proportion in which it was lower down in the region of the torn membranous urethra. If the obstruction is discovered early in convalescence it can often be dealt with satisfactorily by dilatation, but, on the other hand, if it is only discovered late, granulations will have been replaced by dense fibrous deposits that are unlikely to yield to such methods of treatment. For this reason it is a wise precaution always to make sure that the passage is clear by passing a metal instrument a fortnight after prostatectomy. A special look-out must be kept for the occurrence of post-prostatectomy obstruction in all cases in which the prostate is small and does not project into the bladder. The fact that an open operation may have been performed in the removal of such a prostate will provide no guarantee that obstruction will not occur in the process of healing. When an obstruction has been discovered and treated, bougies must be passed at extending intervals until it is certain that no recurrence is taking place. If the healing of an obstruction by means of a dilatation proves unavailing, two alternatives are left—namely, to reopen the bladder and dissect away all scar tissue in the neighbourhood of the bladder outlet, or else to use some form of prostatic punch. In order that the latter may be possible, the obstruction must, of course, not be so great as to preclude the passage of an instrument. If this cannot be achieved, an open dissection of all scar tissue from the vesical outlet must be carried out. The bladder can then be completely closed, and drainage provided for by means of an in-dwelling catheter.

Although the majority of cases of post-prostatectomy obstruction are explained by fibrosis, another possibility must always be borne in mind. Statistics have shown that some 15 per cent. of seemingly innocent prostates contain foci of malignancy. This figure, in my opinion, gives an exaggerated idea of the incidence of malignant elements, since the pathological reports on which it is based include such doubtful conditions as pre-cancerous states. But in spite of this we would be wise to remember that, although the prostate has been successfully removed, malignant disease may recur in the site of operation and cause an obstruction. We are indeed realizing more and more that we do not rid the patient of all prostatic tissue when we shell out his enlargement. In fact, some of us are inclined to deny that we have removed the prostate at all, but have merely dealt with submucous glands lying between the prostate and the mucosa. It may be by no means easy, in the absence of clear proof of the nature of the original operation, to decide whether the obstruction that subsequently occurs is fibrous or malignant, but the possibility of its being the latter must always be borne in mind.

ADHESIONS BETWEEN BLADDER WALL AND WOUND

It is the practice of most surgeons when sewing up the abdominal wound to make sure that the bladder has not been drawn up by the drainage tube but has been pushed down into the depths of the wound, well away from the skin. Yet in spite of this precaution, fistulae,

due to the mucous membrane having become adherent to the scar, still occur in our practice. If this is not quickly remedied, hernia of the superior wall of the bladder through the wound subsequently takes place, especially in stout patients suffering from distension and constipation. This trouble is also more likely to be encountered when the surgeon has opened up the cave of Retzius during the operation. The dislodgement of the fat lying within this space encourages the formation of adhesions between the bladder wall and the posterior surface of the os pubis, to be followed in time by adhesions between the skin and the vesical mucosa. Once this has happened, time is only lost by postponing surgical intervention. However much the patient may resent another anaesthetic, it cannot be avoided. Personally, I tell my patients that I can save them many weeks of convalescence by inserting a few stitches into their wound, and for the sake of this advantage they cheerfully consent. Once under the anaesthetic the bladder is dissected away not only from the suprapubic scar but also from the os pubis. After carefully inspecting the interior of the bladder to make sure that there is no obstruction at the outlet, it is completely closed and a catheter tied into the urethra.

OTHER POST-OPERATIVE COMPLAINTS

So far we have considered the factors of sepsis and obstruction only in their relation to persistent suprapubic fistula. It must, however, be remembered that they are responsible for other unfortunate sequelae of prostatectomy, such as painful micturition, frequency, and calculus formation. A patient who has submitted to so grave a proceeding as prostatectomy has the right to expect that he shall be relieved of the discomforts that brought him to the operating table. If he still continues to rise three or four times at night, and if he finds that the passage of urine causes discomfort, he has grounds for complaint. The residual urine of a patient who has undergone prostatectomy should therefore be tested, and if it is more than two ounces, and some months have elapsed since the operation, he should be cystoscoped. Sometimes the poorness of the operation results will be explained by the existence of some slight obstruction to the passage of the instrument, sometimes by small diverticula that previously had been missed, and sometimes by the fact that the bladder walls have been so damaged by prolonged distension and sepsis prior to operation that they have never recovered.

Treatment of these unsatisfactory cases, if it is to be effective, must be thorough—something more than the oral administration of a urinary antiseptic of doubtful value. Lavage of the bladder is usually indicated, and, since this must be done frequently, it is best whenever possible to teach the patient how to carry this out for himself. If there is much residual urine, the washing is best done through a catheter, but otherwise by the Janet method. I can recall several cases of persistent post-prostatectomy sepsis, some complicated by a tendency to form calculi, that owe their present comfort and freedom from stones to the fact that they have learned to wash out their bladders daily with as little difficulty as most of us experience in cleaning our teeth.

If there is a criticism that may sometimes with justice be made of our work as prostatic surgeons, it is to the effect that, having steered our patients through the "narrows" of the operation, we are over-ready to leave them before they have reached smooth waters. It is not enough that the patient who has previously micturated with difficulty should now do so with ease; we must regard our work as unfinished until he is free from all smarting and frequency, and until the urine contains only a minimum of pus.

MILK-BORNE DISEASES *

BY

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It is needless to point out the importance of milk-borne diseases; their existence is not only recognized by medical and veterinary practitioners, but also by the general public. They may be divided into two classes: (1) those in which the milk becomes contaminated after withdrawal from the cow—for instance, typhoid and the paratyphoid group of fevers, some epidemics of streptococcic and staphylococcic sore throats, and perhaps scarlet fever; (2) those the causative organism of which actually infects the cow and is excreted with the milk; these include bovine tuberculosis, undulant fever, and perhaps certain epidemics of sore throat, scarlet fever, and diphtheria.

The diseases in the first category are usually associated with cases in man or carriers of the specific microbe in individuals, such as milkers or others who are concerned with handling milk. Occasionally the contamination is less direct, and outbreaks have been described in which water fouled by excreta of infected people has been used to clean vessels employed in the distribution of milk. Whatever the source of the contamination the milk acts simply as a suitable medium for the multiplication and conveyance of the specific micro-organism to the consumer; the cow is unaffected and perfectly healthy. Investigation of such epidemics shows that all cases of the disease can be connected with a particular source of milk supply, and further research usually results in the discovery of individuals who are infected or are carriers of the causative micro-organism. Such a history can be obtained in many epidemics caused by the typhoid bacillus or members of the Salmonella group of bacteria. In the case of outbreaks of sore throat and scarlet fever, however, although the usual method of milk contamination is from infected human beings after withdrawal from the cow, there is some evidence that the cow's udder can be infected occasionally by milkers or others. They will be discussed in a later section.

In the second category the most completely studied disease is bovine tuberculosis, and even to outline the mass of facts known of this disease and its transmission to man is impossible in the time at my disposal, and my remarks will therefore be limited to a few selected points.

TUBERCULOSIS OF THE COW AND TUBERCLE BACILLI IN MILK

Forty per cent. of the milch cows of England and Wales are stated to be tuberculous as estimated by the tuberculin test and post-mortem examination; probably this is an under-estimate, the true figure being considerably higher. The incidence of infection increases with the age of the cow; the disease is frequently fatal and causes serious economic losses. About 0.2 per cent. of cows have clinically recognizable tuberculosis of the udder; there are also a considerable number in which tuberculosis of the udder may escape clinical recognition. Such animals almost certainly secrete tubercle bacilli, either continuously or intermittently in their milk.

Cows with progressive tuberculosis, although apparently in good condition and yielding large quantities of milk, may from time to time secrete tubercle bacilli in the milk, although there is no local lesion in the udder. Frequently such animals excrete large numbers of tubercle bacilli in the faeces, which may constitute another source of milk contamination. Examinations of mixed samples of milk

* Read in opening a discussion in the Section of Bacteriology at at the Centenary Meeting of the British Medical Association, London, 1932.

supplied to some of the larger towns show considerable variations as regards the presence of tubercle bacilli ; the extreme figures are from 2 to 13 per cent., the average positive results approximately 7 per cent.

Dissemination from cow to cow by droplet infection is easily understood when one sees the crowded, ill-ventilated, and dirty byres in which the animals remain continuously for many months of the year ; but what is more surprising is the almost equal percentage of reactors in animals kept largely in the open fields. Recent research, however, has shown that the tubercle bacilli are extremely resistant to external conditions. For instance, virulent bovine tubercle have been recovered from cow manure after one year, from a lump of cow dung for upwards of two years, and even from the effluent of a drainage system of the septic tank type. It is probable, therefore, that contamination of pastures capable of spreading the infection is widespread and an important factor in the dissemination of bovine tuberculosis among cattle.

Infection of Human Beings with Bovine Tubercle Bacillus

Tuberculosis of bovine origin in man is more common in early life, and the majority of infections take place before the age of 5 ; the number of deaths is also greatest during this period. It occurs, however, at all ages, and the commonest site of infection in adults is the cervical glands.

Bovine tubercle bacilli are found in the following tuberculous lesions ; the percentage figures given have been collected from cases of all ages. Lupus, 51 per cent. ; cervical glands, 46 per cent. ; scrofuloderma, 31 per cent. ; tuberculous meningitis, 27 per cent. ; bone and joints, 18 per cent. ; genito-urinary, 17 per cent. ; pulmonary tuberculosis, 1 per cent. These figures are culled from English statistics, and it will be noticed that pulmonary infections are very uncommon. Recent work in Scotland shows that bovine tuberculosis in man is probably more frequent in that country and the lungs more commonly affected. It has been estimated that in England and Wales there are 4,000 fresh cases of infection with the bovine bacilli every year and some 2,000 deaths annually. Many who survive are invalids for long periods, and even when they recover may be severely crippled.

I think that I have said enough concerning bovine tuberculosis to bring home to everyone its extreme importance, from the point of view of both the agriculturist and the medical practitioner, and I shall now proceed to consider another important milk-borne disease due to a bovine infection—namely, undulant fever. Before doing so, although I have purposely refrained from referring to the work of individual authors, I must draw attention to the work of one English author—namely, Dr. A. Stanley Griffith, who has for many years emphasized the importance of bovine tuberculosis in man. He has gained a world-wide reputation, and without his brilliant and persistent work our knowledge on the subject would be very much poorer.

Undulant Fever

Undulant fever may be caused by the *Br. abortus* of Bang, which is the causative organism of infectious abortion in cows. Infectious abortion is a very common disease in cows, and is becoming more widespread. It is of great economic importance as it causes very severe losses to the farmer although not usually a fatal disease. The important fact from our point of view to-day is that the cow after aborting may excrete large numbers of *Br. abortus* in the milk and may continue to do this for years. Some idea of the prevalence of this organism in milk may be ascertained by the fact that at Manchester 5.7 per cent. of "single" milks and 8.8 per cent. of "mixed" milks were found to be infected with *Br. abortus*. Other animals may be infected naturally with *Br. abortus*—for instance, sheep, pigs, horses, and occasionally dogs. *Br. abortus* is closely allied to *Br. melitensis*—in fact, the relationship is even closer than that between the bovine and the human tubercle bacillus. *Br. melitensis* injected into cattle produces abortion with the same pathological manifestations as those produced by *Br. abortus*.

We are all familiar with the disease formerly known as Mediterranean or Malta fever, the causative organism of which was discovered by Bruce in 1886, and which was shown in 1905 to be due to drinking goat's milk. From 1912 onwards cases were reported in which cow's milk was suspected of conveying the disease. From 1921 cases of infection in man with what was considered to be of *Br. abortus* origin were described. Similar cases were reported in 1924 from the United States, where undulant fever had been recognized since 1905. In northern Europe in 1928 Kristensen drew attention to the large number of cases of almost certain bovine origin occurring in Denmark. In 1927 and 1928 numerous cases were reported from Sweden, and cases were noticed about the same time in Holland.

Up to 1929 some 14 cases had been described as contracted in this country. Since then a number have been diagnosed by the agglutination test or by blood culture, and the resulting cultures have shown the characters of bovine strains. There are many points of interest in this disease. The large number of cows infected and secreting bacilli in their milk has already been referred to ; why, therefore, should the disease be so uncommon? It must be accepted that the majority of strains of *Br. abortus* of cattle have very little power of infecting man. It is otherwise with strains isolated from pigs, and probably also with strains from sheep. Several laboratory infections in bacteriologists working with porcine strains have been reported from the United States. The incidence of contagious abortion of pigs in this country is unknown, but it is believed that cases occur. With strains of *Br. abortus* isolated from pigs, cattle may be infected, and it is possible that such strains, even after passage through a cow, may remain infective for man.

The symptoms of undulant fever derived from cow's milk are exactly similar to those of Mediterranean fever originating from goat's milk. The mortality is low, but the fever may continue for long periods. Diagnosis can be made by the agglutination test worked out by Wright and his co-workers in 1897, and this can, in some instances, be confirmed by blood cultures. It is advisable in all cases of continued fever of unknown origin to have the blood serum tested for the presence of agglutinin against *Br. abortus* and to make a cultivation from the blood.

Mastitis in Cattle

It remains to discuss the question of mastitis in cattle and its relationship to human epidemics of sore throat. Mastitis in cattle is a very common disease. Many cases are due to streptococci, large numbers of which may be excreted in the milk. Usually the streptococci are of a peculiar type and differ in several of their characters from streptococci of the *pyogenes* group isolated from diseases in man. In a certain proportion of the cases, however, streptococci resembling in every way the *pyogenes* group are found, and it is thought by some workers that the cow's udder has been infected by its attendants. Proof that milk containing such cocci causes epidemics of sore throat, and perhaps scarlet fever, is harder to obtain, but evidence is accumulating in favour of such a hypothesis. Infections of the teats of cows with virulent diphtheria bacilli have been described, and the bacilli have

also been found in the milk ; this and other infections conveyed from man to cattle are favoured by the filthy habit of " wet " milking.

The foregoing is a very brief and incomplete account of some of the diseases which may be conveyed by milk. How can these diseases be prevented? The ideal is to have absolutely healthy cattle, well housed, well fed, and well groomed, attended by healthy men who are cleanly in their methods of milking. Such an ideal is hard to obtain, as human carriers of such organisms as typhoid and paratyphoid bacilli may show no symptoms of their infection, and virulent haemolytic streptococci may be carried in the throats of apparently healthy individuals.

Much, however, may be done in eradication of tuberculous animals from herds by efficient tuberculin testing, preferably by means of the double intradermal test. Rapid elimination of tuberculosis is comparatively simple when the herd is only slightly infected and the pastures and premises are not heavily contaminated, but in herds with a high percentage of reactors and a number of cases of clinical tuberculosis leading to extensive contamination of premises and pastures complete eradication is a slow process and may take years. Contagious abortion is even more difficult to get rid of, but something can be done by testing the agglutinating power of the blood serum and eliminating carriers detected by this means.

In the meantime pasteurization is widely used, and when this is carried out efficiently and the milk bottled by machinery and delivered sealed to the consumer all milk-borne disease should disappear. I can say from personal knowledge that some of our great distributing agencies carry out all these processes in a most efficient manner, and I believe that as regards plant, organization, inspection, and laboratory controls, certain firms in this country are unsurpassed anywhere in the world. The objection to pasteurization is that it may affect in some way the food value of the milk, and it is to be hoped that further research and field experiments on a large scale may lead to methods of eradication of bovine tuberculosis and contagious abortion, so that the supply of safe raw milk at a reasonable price will continue to increase.

Memoranda

MEDICAL, SURGICAL, OBSTETRICAL

PROLONGED POST-ANAESTHETIC UNCONSCIOUSNESS FOLLOWING NEMBUTAL AND CHLOROFORM

In view of the prevailing interest in basal anaesthesia, the following case may prove worthy of publication:

A man aged 69 years came to operation for excision of a papilloma of the floor of the mouth by diathermy. He was a healthy, active man, weighing about 11 st. He was admitted to the Royal Victoria Hospital on February 22nd. 1932, and was operated on at 2.15 p.m. on the following day.

Premedication in the form of 3 grains of nembutal was administered by the mouth one hour before operation, followed by 1/50 grain of atropine hypodermically half an hour later. On reaching the anaesthetic room the patient was practically unconscious, but would answer questions. Chloroform was administered by means of a Junker apparatus, the patient being kept in the second stage of anaesthesia throughout the operation, which lasted about twenty minutes.

Some three hours later, owing to reactionary haemorrhage, a second short chloroform anaesthesia was administered to allow of the control of this haemorrhage. The patient's condition gave rise to little or no anxiety, but return to consciousness was delayed until February 26th, three days later. During this period he would react to stimuli, answer questions, and pass urine into a bottle. His bowels acted with enemata. The healing of the wound was normal, and recovery was otherwise uneventful.

In view of the fact that serious complications after basal anaesthesia with nembutal have seldom been reported, we feel that this case may be of interest, as the condition of the patient, who had had chloroform in addition to nembutal, was very far from being normal.

I am indebted to Mr. H. W. L. Molesworth, F.R.C.S., for permission to publish this case.

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TETANUS COMPLICATED BY FACIAL PARALYSIS

The following case presents the interesting combination of tetanus and facial paralysis, the rare condition referred to as Kopftetanus by German writers. Four similar cases are described in " Allbutt and Rolleston." Further points of interest are the adoption of the intensive serum therapy, as advocated by Cole in the *British Medical Journal* of April 23rd, and the use of avertin to allay the spasms.

The patient, a man aged 24 years, met with a cycling accident seven days before admission to hospital, receiving three small wounds in the facial region—one in the left frontal region, one in the right infraorbital region, and one over the right mandible. After the accident he proceeded straight to his panel doctor and had the wounds, which were fairly superficial and not especially soiled, cleaned and dressed, the infraorbital and the mandibular wounds being sutured with silkworm sutures. During the next four days the patient felt quite well, but on the fifth day he complained of stiffness in his jaw. The stiffness gradually grew more severe, and on the same evening he had a numb sensation on the right side of the face. Next day he could open his jaw only with difficulty, and the right side of his face was paralysed. He was admitted to Weymouth and District Hospital next morning.

On examination he was found to have trismus and a paralysis of the right side of the face. The wounds were encrusted with healing granulations. At this stage the muscular spasms were local, and confined to the jaw. Concentrated antitetanus serum (Parke, Davis and Co.), 16,000 units, was given intrathecally just after admission and the wounds were cleaned up. After the injection the patient volunteered to feeling much better, but that evening his temperature and pulse rate rose to 101.2° F. and 132 respectively.

On his second day in hospital he twice vomited small quantities of greenish, frothy fluid. Antitetanus serum, 16,000 units intrathecally and 16,000 intramuscularly, was given, and the spasms remained localized. His temperature and pulse rate fell to normal. Nourishment was taken well through a gap in the teeth. On the third day, however, the spasms began to involve the cervical and dorso-lumbar muscles, and antitetanus serum, 16,000 units intrathecally and 16,000 intramuscularly, brought no relief. On the fourth day opisthotonos was marked ; temperature was 102°, pulse rate 130. Avertin per rectum was administered morning and evening for the spasms, and controlled them. The dosage of serum was increased to 30,000 units intrathecally and 30,000 intramuscularly, and, as the fifth day brought no improvement and the temperature and pulse rate remained high, this was further increased to 40,000 units intrathecally, 40,000 intramuscularly, and 40,000 intravenously, this daily dosage being maintained till the patient died. Avertin, given twice as before, failed to control the spasms, and had to be reinforced by chloroform and morphine. The patient was now losing ground steadily, his pulse being very rapid and at times thready, while his temperature remained between 101° and 102°. He was restless and delirious. On the seventh and eighth days the avertin, even with the chloroform, had a very transient effect. The patient had a hyperpyrexia just before death, the temperature rising to 108°. Death occurred from acute dyspnoea on the evening of the eighth day. A post-mortem was suggested, but permission was withheld.

My thanks are due to Drs. Tasker and George Gray for permission to publish this case.

Weymouth. J. GILLESPIE SLIMON, M.B.

Reviews

VITAL STATISTICS IN THE TROPICS

The present state of medical statistics illustrates the unfavourable connotation of the adage that the best is the enemy of the good. In comparison even with the organization of our grandparents' time, *a fortiori*, in comparison with John Graunt's day, the theory and practice of vital statistics in England have changed almost as much as our means of transport. The publications of the General Register Office differ from the Bills of Mortality almost as much as a Rolls-Royce car differs from a pack-horse. But there are still thousands of miles of country in which progress can be made on a pack-horse and a Rolls-Royce car would be useless lumber. In such country a pioneer who declined to try to move unless in a Rolls-Royce car would not move at all. There are many countries in which present vital-statistical records are below the level of accuracy and completeness of the sixteenth century Bills of Mortality, where the difficulties in reaching truth are greater than those John Graunt had to face. Improvement can be effected, not by adopting a haughty, " scientific " attitude, but by going to school to the old pioneers and condescending to learn quite simple things. *Vital Records in the Tropics*,[1] by P. GRANVILLE EDGE, is an attempt to interest pioneers and officials, lay and medical, in the building up of a statistical system with the simplest materials.

Mr. Edge writes with an enthusiasm which will, we hope, be contagious. He first deals with the problem of enumeration, and discusses clearly and sympathetically the practical difficulties. Native peoples have their prejudices ; some, such as the belief that the object of a census is to obtain an adequate supply of heads for purposes of white man's magic, ill founded; others, such as the belief " that official printed forms have an annoyingly intimate correlation with taxation," well founded. Whether the prejudices are well or ill founded, they must be understood. The training of native assistants is a matter of importance. The author notes the desirability of dress rehearsals—that is, the making of trial censuses before the date fixed for the official counting. Where direct enumeration is impossible, one of the indirect methods used by our ancestors—the counting of huts or hearths, etc.—must be tried. The author passes to the recording of vital happenings, and offers a variety of useful suggestions. For instance, Dr. A. R. Lester of Kahama, Tanganyika Territory, has found the distribution of circular metal disks of tin and brass for female and male children respectively, used in conjunction with a system of letters and numbers, a useful plan. On the registration of a birth, the mother is given a disk to wear round her neck. The disk has stamped on it the district number, the chiefdom or sultanate number, and the serial number of the birth. If the child dies, the mother is required to return the disk. Nobody who thinks such trifles beneath his dignity will make progress. The book ends with a clear description of some of the most important methods of presenting data and calculating averages.

The author does not profess to have composed a systematic treatise. As he says, " No single person would be capable of suggesting the kind of organization or system of record-keeping suitable for *all* tropical areas. . . . All that has been aimed at has been the provision of schemes in *broad* outline; details must be filled in by men on the spot." His object is to interest the men who will have the opportunity to do pioneer statistical work, and, in our opinion, his book should do much good. The bibliographies at the ends of the chapters are useful, but need some verbal revision.

[1] *Vital Records in the Tropics.* By P. Granville Edge. London: G. Routledge and Sons, Ltd. 1932. (Pp. xi + 167 ; 1 plate. 7s. 6d. net.)

TUMOURS OF THE FOURTH VENTRICLE

Recent studies on intracranial tumour have so far advanced our knowledge of the natural history of the different pathological varieties of new growth of the brain that in many instances it is now possible to determine clinically, not only the situation of a tumour, but its cellular character. It has also been shown that in planning treatment and in assessing prognosis it is essential to know the nature as well as the localization of the tumour. Each kind of tumour of the brain tends to have its special age incidence and its favourite site of development. One or two types are amenable to treatment; most are not. That is to say, in some cases we may reasonably hope to extirpate the growth completely —either without fear of recurrence, or at least with the prospect of a long period of freedom from recurrence—and may hope that the extirpation once successfully accomplished will leave the subject in the possession of sufficient mental capacity and bodily agility to make the renewal of his lease of life worth the having. It is this last criterion—surely an important one from the patient's point of view—which the surgeon is apt to ignore when he is compiling his statistics. It is nevertheless by this standard that the surgery of intracranial tumours must ultimately be judged.

An interesting commentary on all these matters and a methodical and comprehensive account of the tumours of the fourth ventricle[2] are to be found in Dr. LEREBOULLET's recent monograph under this title. He confirms earlier observations as to the age incidence, clinical course, special symptomatology, and response to treatment of the varieties of tumour commonly found to arise within, or to encroach upon, the fourth ventricle. Thus, the medulloblastoma is a rapidly growing, metastasizing, and malignant tumour of the first decade of life. The cystic astrocytoma of the cerebellum, on the other hand, is a slowly growing tumour of adult life, strikingly amenable to surgical intervention, with a low rate of recurrence and a high level of functional restoration. Cushing and his school have contributed several valuable monographs on each pathological type of tumour in this region, but in Lereboullet's monograph the subject is treated from a topographical point of view, the variations in behaviour of these tumours being well brought out. The monograph may be warmly commended to the paediatrician and to the neurologist.

CIRCULATORY FAILURE

Cardiac and Circulatory Failure is the title of a very readable little book by Emeritus Professor WENCKEBACH.[3] It is one of a series which is being published, chiefly for post-graduate study, on somewhat similar lines to our " Recent Advances," but it is essentially clinical in outlook, and less detailed. The wealth of clinical material treated is admirably set out, yet much of the interpretation is that of the last century. If this is borne in mind by the reader he will enjoy the book, but he should be guarded in accepting all that the author writes on the nature of congestive failure and its premonitory stages.

It may still be difficult to separate the effects of simple valve lesions, which may or may not have an isolated

[2] *Les Tumeurs du Quatrième Ventricule.* Par Jean Lereboullet. Paris: J. B. Baillière et Fils. 1932. (Pp. 431 ; 30 figures, 21 plates. 65 fr.)

[3] *Herz- und Kreislaufinsuffizienz.* Von K. F. Wenckebach. Medizinische Praxis, Band xii. Dresden und Leipzig: T. Steinkopff. 1931. (Pp. x + 120 ; 7 figures. R.M. 8 ; bound, R.M. 9.50.)

existence, from those of a damaged myocardium, but it would be injudicious to pass without comment the old thesis that heart failure is the invariable result of valvular disease of the heart. Again, on *a priori* grounds, it cannot but seem strange that the heart should be credited with the power of failing partially in one or more of its four chambers when its simple muscular structure, its direction from the sino-auricular node, and its co-ordination by the common conducting system are remembered. When the only obvious pathological finding in congestive failure was a defective valve it was natural to succumb to the temptation of making it the cause of the condition, and it was often possible to forecast by mechanical principles what muscular changes would be expected to follow a given valvular obstruction or incompetence, and even to affirm that they could be demonstrated at the bedside. Stationary valvular disease, however, is compatible with many years of almost unimpaired bodily activity. It is not a recrudescence of endocarditis which precipitates the onset of congestion through the *crescendo* stages of limited exercise tolerance, but the intervention of some factor which has not been identified, though it is believed to be associated with failure of the myocardium through some added infection. There is probably no more useful demonstration of the necessity of abandoning old ideas than the picture of a patient propped up in bed fighting for his breath in congestive failure. A few weeks before he was a tolerably active member of the community, who could in going up to his bedroom raise the eleven stone of his body weight through ten feet in less than a minute with little increase of his respiratory rate. Now he is unable to supply the tenuous modicum of oxygen required for his few active capillaries ; yet the vast difference in cardiac output has no quantitative counterpart in the stethoscopic findings. It remains for the future to disclose what the sudden myocardial change is, and how it arises. It would be idle for us to suppose that we understand the mechanics of the circulation in congestive failure, which is usually associated with a raised pressure in the very capacious venous cistern and a normal or slightly raised arterial pressure. It is even unknown if the increased venous pressure is a passive result of myocardial failure or a reaction to it. A clearer conception of these phenomena of the diseased circulation will be more readily attained if the vast reserve power of the normal circulation is kept well in view.

The rest of the book treats of such subjects as shock, fainting, capillary circulation, high tension, and angina pectoris in a clear and explanatory style, enriched by numerous examples from the clinics, and its modern tone contrasts agreeably with that of much of the earlier parts.

MEDICAL PSYCHOLOGY

The Mind in Conflict,[4] by Mr. R. A. HOWDEN, is described by its author as an introduction to modern medical psychology written by a layman for laymen. It is written very clearly in simple language, and may be of interest to those who wish to know something of analytic psychology and the current connotation of such terms as "the subconscious," "the preconscious," "repression," "the censor," etc. Here this notice might very well end, but as the book is introduced in seven pages by Dr. William Brown, and ends with a list of books by Drs. Crichton-Miller, J. R. Rees, J. A. Hadfield, and Professor William MacDougall and Dr. William Brown, which are recommended by the author to the lay public, a few words more may not be out of place. Dr. William Brown says it gives just the kind and amount of information on the subject every educated layman should have. Whether this opinion will be generally upheld may be doubted. "Modern medical psychology" the author describes as that branch of psychology which deals with the human mind in sickness "and as in effect the study and cure of nervous and mental diseases." He then puts the question: "What are nervous and mental diseases?" and, having in a few words both restricted his field and forestalled criticism by saying that the adjective "mental" when used in his book in no way denotes "insanity," though curiously maintaining that "nervous and mental diseases" in his limited sense of the term may lead "from lesser to greater to a perhaps incurable psychosis," he answers the question as follows:

> "Diseases exhibiting symptoms for which there can be found no organic cause are due to causes existing in the mind of the patient—the mind consisting of the conscious, preconscious, and unconscious, due for the most part to unresolved conflicts . . . therefore if the condition of the patient is due to some organic trouble *the general practitioner or the surgeon* [our italics] is the proper person to deal with the case . . . but if the symptoms are due to 'functional' conditions they are amenable to psycho-therapy, and should be treated on these lines."

Possibly Dr. William Brown himself felt some words of caution were advisable, and therefore, after referring to the working of the unconscious mind and to the physiological and pathological working of the brain, nervous system, endocrine glands, etc., he adds these significant words: "Much, if not all, of it may be regarded as the inner or mental aspect of such physical processes." This little book is written with evident sincerity of purpose, but unfortunately it discloses a tendency to clothe theoretical assumptions with the semblance of concrete reality, and it thus incurs the risk of misleading an uninstructed public by giving to airy nothings a local habitation and a name.

RADIOGRAPHIC EXAMINATION OF BONES

A revised and enlarged edition of the radiographic atlas of the normal skeleton[5] by G. HARET, A. DARIAUX, and JEAN QUÉNU is the first of a series by the same authors.

Of all works of this type, that which deals with the normal is of most use, for a study of the normal is necessary in preparation for study of the pathological. The radiographic examination of bones is a necessary part of a complete clinical examination in all cases of injuries and diseases of bones and joints, as it frequently decides the treatment, and is always of the greatest use in indicating the progress of a pathological condition. Many errors still occur, due to a want of knowledge of the normal. In the interpretation of any *x*-ray films, there is always a mental comparison between what the observer sees and his memory of the normal. This is obtained by the radiologist through long study of all kinds of films. But the medical student is seldom taught the *x*-ray appearances of normal bones and joints. He still obtains most of his knowledge of *x*-ray interpretation by seeing films of abnormal conditions in the wards. This atlas presents him with a methodical means of studying the normal.

The first part of the atlas deals with the adult skeleton ; the second with the foetus *in utero* and with the newborn; the third with the epiphysis. All the films, with a very few exceptions, have been produced from the living subject, and the authors think these are the only really useful ones. The reduced prints are in the positive and

[4] *The Mind in Conflict*. By Richard Amaral Howden. With an introduction by William Brown, M.D., D.Sc., F.R.C.P. London: H. Milford, Oxford University Press. 1931. (Pp. xi + 83. 2s. 6d. net.)

[5] *Atlas de Radiographie Osseuse, I: Squelette Normal*. Par G. Haret, A. Dariaux, Jean Quénu. Avec la collaboration de H. P. Chatellier. Deuxième édition, revue et très augmentée. Paris: Masson et Cie. 1932. (Pp. 186 ; 149 figures. 200 fr.)

the reductions vary in size, but this is always indicated in the text. The plan adopted here is an exceedingly good one. Instead of explaining a radiograph of a bone by a simple line sketch, the authors have drawn on a second radiograph, reproduced in a lighter shade, all the details which are to be read in the first. In doing so, they have been guided by the negative, and thus more is sometimes indicated in the sketch than can be seen in the reproductions, however good. Marginal notes give the names of the parts represented. The atlas does not deal with radiographic technique, and so the details of exposure, etc., are not given. A very useful table of ossification, compiled from various sources, which are duly acknowledged, is a valuable addition to the atlas. A special section is devoted to the accessory bones, and there is an excellent index.

The radiographs are beautifully reproduced, and the atlas can be recommended to students and radiologists as a standard work for constant reference.

NOTES ON BOOKS

The important advances which have recently occurred in our understanding of the nature of sex have, to a large extent, been based on morphological and physiological investigations. Professor MARANON, in his book on the *Evolution of Sex and Intersexual Conditions*,[6] presents a point of view he has arrived at as a result of twenty years' clinical experience in the General Hospital of Madrid, and draws upon varied sources—clinical, experimental, sociological, psychological, etc.—to support his conception of sex. His chief thesis is that "the masculine and feminine are not two diametrically opposed entities, but successive degrees in the development of a single function—sex," and that complete sexual differentiation is rare. The psychology of sex and of intersexual conditions is discussed at length to maintain this thesis. Physiological investigations are also discussed, but the impression is gained that unconfirmed and vague experimental evidence, sometimes of an unsatisfactory nature, is used to bolster up complex psychological theories. The author himself is under no illusions about the weak parts in his arguments, but suggests that "when we confront a vast biological problem it is necessary to enclose it with a theoretical system, whose plan is drafted in part on the basis of objective data and in part empirically."

The second edition of *Aids to Surgical Diagnosis*,[7] by Mr. C. P. G. WAKELEY, has been thoroughly revised, but notwithstanding the inclusion of a good deal of fresh material only five pages have been added. An attempt has been made to epitomize the essentials in surgical diagnosis in order to make them of easy reference for the practitioner and the student. The book has a useful index, the matter is tabulated clearly, and there is complete avoidance of padding—all necessary characteristics for a book of this kind.

Foods in Health and Disease[8] is a small, well-written book which may add much to the knowledge of the public on the subject of dietetics. It opens with a brief discussion of food elements. A considerable section is devoted to the nature of foods themselves, and these pages include descriptions of the growth and habitat of a large number of fruits and vegetables; the correct season for their purchase, the best way of preparing them, and their food value, are fully discussed. This part of the book is well and freely illustrated, and contains matter which is of interest to all, and probably new to most of us. The last part of the book consists of chapters dealing briefly with certain common diseases in relation to diet. The usual tables of food values appear in an appendix. The author has held many teaching appointments, and understands how to present the subject clearly and in an interesting manner. She perhaps errs a little on the side of assuming in her readers too intimate an acquaintance with medical and scientific terms.

Under the title of *The Doctor Explains*,[9] Dr. RALPH H. MAJOR, professor of medicine in the University of Kansas, has written a work which can be read with profit and pleasure, not only by the intelligent layman, for whom it is intended, but also by the medical student and qualified practitioner who need a well-written and lively introduction to the history of medicine. The work consists of thirteen chapters, dealing respectively with the physical examination of the patient, the history of the microscope and its importance in medicine, the role of the blood, heart disturbances, with a sympathetic account of Sir James Mackenzie, the history of blood pressure and the importance of its measurement, the story of diabetes, body fuel and its consumption, vitamins and deficiency diseases, the history of syphilis, the problem of hypersensitiveness, x rays and other rays, the history of antiseptics, and the introduction of anaesthetics. The text is freely interspersed with contemporary illustrations.

[6] *The Evolution of Sex and Intersexual Conditions.* By Dr. Gregorio Maranon. Translated from the Spanish by Warre B. Wells. London: George Allen and Unwin, Ltd. 1932. (Pp. 344. 15s. net.)

[7] *Aids to Surgical Diagnosis.* By Cecil P. G. Wakeley, F.R.C.S., F.R.S.Ed. Second edition. Students' Aids Series. London: Baillière, Tindall and Cox. 1932. (Pp. vii + 172; 6 figures. 3s. 6d. net.)

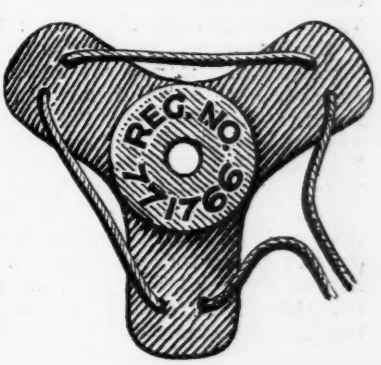
[8] *Foods in Health and Disease.* By Lulu G. Graves. New York: The Macmillan Company; London: Macmillan and Co., Ltd. 1932. (Pp. ix + 390; illustrated. 16s. net.)

[9] *The Doctor Explains.* By Ralph H. Major. London: Chapman and Hall, Ltd. (Pp. xxvi + 277 + viii; illustrated. 15s. net.)

PREPARATIONS AND APPLIANCES

COMBINED TOURNIQUET AND DRESSING SHIELD FOR CIRCUMCISION

Dr. D. J. CONNOLLY (Sale) writes: The uncertainty of the usual circumcision dressing remaining in position for any length of time, and the fact that it provides no security against preputial haemorrhage, has led me to put forward the appliance described below. Its application is easy, with or without an extra dressing. It consists of a thin moulding of elastic rubber having a central circular aperture that forms the tourniquet, surrounded by three extended flaps of rubber pierced with holes through which a cotton tape has already been threaded, making the appliance ready for use. After sterilization the shield is packed with zinc oxide powder in an airtight envelope.



The advantages of the apparatus are: (1) tourniquet pressure can be obtained to any extent—this pressure may be adjusted by nicking or cutting the central aperture with scalpel or scissors at the time of fitting; (2) it is relatively immobile—the tied tapes may be made long enough to pass round the groins if necessary; (3) there is efficient antiseptic action; (4) wetting of the dressing from urination in children can be practically ignored; (5) application is easy—which is far from being the case with the ordinary dressing.

The appliance has been made to my requirements by F. Whitehead and Co. (Pickets Street, Balham, London, S.W.12).

STABLE PREPARATIONS OF DIGITALIS

"Diginutin," which was introduced by Messrs. Burroughs Wellcome and Co. as a stable solution of the total glucosides of digitalis leaf, is now also available as "'tabloid' diginutin," a compressed product of uniform potency embodying the advantage of convenience of administration, especially for ambulatory patients. The strength is adjusted to correspond with that of standard *B.P.* tincture. It is issued in two strengths, equivalent to 5 minims and 10 minims of "diginutin" respectively, in bottles of 25 and 100.

TESTIMONIAL TO DR. ALFRED COX

PRESENTATION CEREMONY

Immediately following the statutory Annual General Meeting on Saturday afternoon, July 23rd, the long-awaited presentation was made to Dr. Alfred Cox on behalf of the subscribers to the Alfred Cox Testimonial Fund. The presentation was made to Dr. Cox on his retirement from the post of Medical Secretary, which he has held since January, 1912, having previously been Deputy Medical Secretary from July, 1908, to December, 1911.

The presentation took the form of a portrait of Dr. Cox, painted by Sir Arthur Cope, K.C.V.O., R.A., which is to be hung in the Association House. As this is at present on exhibition in the Royal Academy, it was not possible to hand it over at an afternoon meeting, but Sir Humphry Rolleston, Bt., Regius Professor of Physic, University of Cambridge, on behalf of the Committee of Subscribers, presented to Dr. Cox an album containing the names of some 5,000 of his well wishers. It was announced that the portrait would be formally handed over to the Association at the President's reception at the Albert Hall on Tuesday evening, July 26th.

Sir HUMPHRY ROLLESTON took the chair on the occasion of the presentation, and was supported by the President (Lord Dawson), the Past President (Dr. W. G. Willoughby), the President-Elect (Professor Moorhead), the Chairman of the Representative Body (Dr. E. K. Le Fleming), the Chairman of Council (Sir Henry Brackenbury), the Treasurer (Mr. Bishop Harman), the Deputy Chairman of the Representative Body (Mr. H. S. Souttar), the Past Chairman (Dr. C. O. Hawthorne), and Sir Ewen Maclean, Chairman of the Committee of Subscribers.

Among others present were Lord Riddell; Professor A. H. Burgess, Manchester; Sir Henry S. Newland, President, Federal Committee of the B.M.A. in Australia; Dr. J. Newman Morris, Vice-President of that Committee; Dr. D. D. Paton, President of the forthcoming Australasian Medical Congress; Dr. A. J. Orenstein, President of the Federal Council of the Medical Association of South Africa (British Medical Association); Professor Alex. Primrose, President of the Canadian Medical Association (which is affiliated to the B.M.A.), and Dr. T. C. Routley, General Secretary of that Association; Dr. F. N. G. Starr, Past President of the Canadian Medical Association; Dr. A. T. Bazin, Montreal; Sir Robert Bolam; Dr. R. C. Buist and Mr. Russell Coombe, Vice-Presidents of the Association; Surgeon Rear-Admiral A. Thomas, R.N.(ret.); Sir Malcolm Watson; Sir W. I. de Courcy Wheeler, Dublin; Dr. James Neal, General Secretary of the Medical Defence Union, and a former colleague of Dr. Cox as Deputy Medical Secretary of the Association; Mr. Michael Heseltine of the Ministry of Health; and representatives of the following bodies—The Medical Women's Federation, The British Hospitals Association, The British Dental Association, The London School of Hygiene and Tropical Medicine, The Association of Insurance Committees, the Association of Clerks to Insurance Committees. In addition, some 500 members of the Association filled the Great Hall.

PRESENTATION OF PORTRAIT

Sir HUMPHRY ROLLESTON, in making the presentation, said:

My Lord President of the Association, ladies and gentlemen, We are here to express our affection and our respect for one who has watched over this Association for more than a quarter of a century, during twenty years of which he has been Medical Secretary. I shall not detail what he has done, nor attempt an estimate of his services. As a man he will ever remain firmly fixed in our minds as a personal friend and as that *rara avis* in these telephonic times, a good correspondent; for has he not written regularly to us all every month? Have we many friends who do that? He can look back with satisfaction on these years of hard work, with many delicate and difficult problems. What a knowledge of men and their manners—perhaps of women, too—he must have accumulated for the intriguing reminiscences he ought to write when he has leisure to turn round and to turn out the thrilling sentences of a strange, eventful history! He has laboured and travelled over much of the civilized and all of the English-speaking world on behalf of our great Association, and his works do follow him. With all this his eye is not dim, nor his natural force abated; and it might be said of him that the simplicity of his character is all the more remarkable because of the astuteness of his mind. We feel the wrench of parting with a tried-out, but not, we believe, with a tired-out, friend, who has played the strict game, and we are anxious to show our feelings by means other than words. To you, my Lord, I offer for the acceptance of the Association of which you are President, Sir Arthur Cope's artistic and living portrait of the Association's devoted Medical Secretary, and to you, Dr. Cox, your devoted friends and admirers offer with every good wish this book—a monument and pledge of their affection—and with it a slip—it were better not to say a scrap—of paper which you, no doubt, will deposit in some safe place. (Applause.)

THE PRESIDENT'S ACCEPTANCE

LORD DAWSON OF PENN, in accepting the portrait on behalf of the Association, said: I accept this beautiful portrait of Dr. Cox on behalf of the British Medical Association with gratitude to those who have made this gift possible. We did not need the picture for remembrance, for the subject is already in the gallery of our hearts. Rather is it a delightful token which will, far beyond our generation, inspire many others to go and do likewise. (Applause.) We are here to-day to show our appreciation of a great work well done. That work has been the means of binding doctors together and giving them a professional consciousness whereby they have learned to think and work together for their own minds' good and for the benefit of the community. Dr. Cox has above all things brought the practitioner out of isolation and given him a place in the sun. That great idea of his found expression in the work that he has done for this great Association, and he has contributed in no small measure to its continuous and prosperous progress. How has Dr. Cox succeeded in his quest? I can answer in the words of Oliver Cromwell: "A captain that knows what he fights for, and loves what he knows." Staunchness and the enthusiasm that knows not monotony have carried him along. Singleness of purpose and faith and devoted labour have given him an ever-gathering band of followers. His object has ever been "to set the cause above renown and love the game beyond the prize." Addressing Dr. Cox, the President said: Let me offer you our tribute of admiration and gratitude for your great work, the results of which will assuredly wax as the years go by, and above all things let me give you the warmest of assurances that you will ever live in our hearts in memory and affection. (Loud applause.)

THE PRESENTATION BOOK

Sir EWEN MACLEAN then handed to Dr. Cox the "Presentation Book" containing, with a suitable inscription, the names and addresses of subscribers to the Testimonial Fund, together with a cheque for £1,000. He wished to say, first of all, how much everyone deplored the absence of Dr. Fothergill, the honorary secretary of this Testimonial Fund, who had looked forward very keenly to this ceremony. In his ready interpretation of a general feeling he might justly claim to be the author and finisher of this event. He had been tireless, indeed at times almost ruthless, in keeping the chairman of the Executive Committee alert and active, as well as the treasurer and all others directly concerned. This very distinguished and representative gathering would wish to offer Dr. Fothergill their congratulations on the successful issue of his devoted labours and a speedy recovery of his health. (Applause.) Sir Ewen Maclean felt sure that Dr. Fothergill would desire him to exhibit the sheaf of telegrams which had been received from all parts of the Empire wishing long life and all happiness to their friend Cox.

Letters also had come from all parts of the Empire in similar vein. The number of contributors to the testimonial was considerably over 5,000, and that number represented not only members of the Association, but non-members and lay persons from all parts of the world. "Sir Humphry Rolleston has spoken of the man; I speak of the man in the organization which in large measure has grown up around him, and to which he has imparted not a few of his characteristics. The confidence with which he has handled so many medical problems is traceable to a fact that should not be forgotten—namely, that Cox was for twenty years in hard-driving industrial practice, and his discerning methods with local authorities are due to the fact that he was a member of the Gateshead Town Council. From 1907 onwards he has been an official of the Association, and whatever may be his limitations as a sailor on one or other of the seven seas, by common consent he has proved himself a master mariner on the troubled waters of medical politics. His first great service was in connexion with the reorganization of the Association, resulting in the birth of the Divisions and of the Representative Body, with the consequent development of the Association on democratic lines. This brought him into intimate contact with Victor Horsley, for whose memory and influence he has so high a regard—a leader whom it was a delight to follow, but, as Cox knew, a disaster to imitate, and a friend whom it was easy to please if hard to satisfy. He did much to tune up the new machinery, which was first installed in time for the Swansea Meeting in 1902—a machinery which was destined ten years later to be tested to the utmost, as to its power to mobilize an effective degree of combination in the profession, so as to secure reasonable conditions of service and remuneration under the great insurance scheme. These and other interests, together with those in charge of them, were flung pitilessly into the political arena. From the turmoil Alfred Cox emerged, tattered but victorious, and, as I verily believe—the many and sharp differences of opinion notwithstanding—without the loss of a single friendship. (Applause.) The signal service rendered by him to King and country, as well as to the medical profession and the Association, during the three years he was so intimately associated with the Central Medical War Committee will not be forgotten, and in recognition of this he was made an Officer of the Order of the British Empire. His worth and merits have been recognized by his Alma Mater, by the University of Manitoba, and by the gift of the Gold Medal of the Association, than which it has nothing higher to confer. We are indebted to him for many special pieces of work, such as his investigation into the conditions of various types of practice in the British Isles, which with its lucid statement of facts and illuminating *obiter dicta* forms one of the bases on which reformation and policy to that end have been founded, notably the scheme for a National Medical Service. But his greatest gift to the Association is himself—his high purpose, his unremitting zeal to implement all the Association stands for, the impress of his personality on the solution of problems or the formation of policy, conveyed by document or speech, the latter in outspoken word, or more often—and just as potently—in *sotto voce* guidance of the chairmen of various committees. There must be few, indeed, of our Branches and Divisions in the British Isles—and for that matter few of our Oversea Branches—which have not at one time or another called in Dr. Cox. In short, Alfred Cox, *per se*, has entered into the web and the woof of our Divisional life at home and across the seas." (Applause.)

Sir Ewen Maclean then referred briefly to Dr. Cox's success in gaining the confidence of Government Departments concerned, much to the advantage of the Association. Those who were his fellow-travellers in Canada in 1930 had abundant proof of his hold on the esteem and affection of their colleagues in that great Dominion, and the sentiments expressed in the inscription on the Bronze gifted to Dr. Cox at the Winnipeg Meeting were rooted also in the memory of his valued service in 1924, when the happy relations now existing between the British Medical Association and the Canadian Medical Association were brought about. In 1925 he went to South Africa, and on his return was able to announce to the Council that two separate medical organizations, with the inevitable discords, had agreed to sink their differences under the aegis of the B.M.A. Still further, as one of the founders of the Association Professionnelle Internationale des Médecins, and as the representative of the B.M.A. thereon, Dr. Cox had done good work and had satisfied himself and persuaded many others that this medical equivalent of the League of Nations was worthy of development. "This ceremony," said Sir Ewen in conclusion, "is a token of sincerest appreciation of the life and work which for twenty-five years Alfred Cox has spent so freely in our service, and when later in the year he leaves us officially, we would venture to remind him that his continued friendship and interest will mean much to us, whilst we wish him health, long life, and every happiness in the years to come."

The presentation was then made by Sir Ewen Maclean amid loud applause, all those present standing and giving Dr. Cox a great ovation.

DR. COX'S ACKNOWLEDGEMENT

Dr. Cox, who was evidently much moved, said: "A few weeks ago I listened to a discussion, the effect of which was whether it would not have rather a depressing effect on a man who had done good service, and might induce him to think he was asked to go on the shelf, if he were made a Vice-President of the Association. I do not know what I ought to think on this occasion, or what is expected to be the combined effect of a Gold Medal last year and a presentation such as this. I have always been of a retiring disposition—(laughter)—and I must confess that I have felt during my career that it has been much easier to deal with criticism, which I have not been spared, than to do justice to such an event as happens this afternoon. Indeed, I think that criticism has had a bracing effect upon me, though I have found it much easier to reply to such criticism when it was criticism of the British Medical Association than when it was criticism of myself. I very much regret the absence of one thing and of two persons from this gathering. The absent thing is, of course, the portrait. I did recognize myself in the portrait—I think it is a very good likeness—though I have certainly failed to recognize myself in some of the things said about me this afternoon. No idea could have given me more acute pleasure than this of a portrait which is going to hang in a room in which I have occasionally officiated. I like to think that in years to come somebody will go across to that portrait and looking at the inscription will say, "Oh, that is Cox. He did very good work for the B.M.A. in his time." The Association has been to me very much more than the means of earning a living, although I do not ignore that side of the matter. But I look upon you people here to-day as my family; most of you are people with whom I have worked and who have worked with me, and in course of years a very strong bond does grow up which has much more than an official character. I regret, also, that the artist, Sir Arthur Cope, is not present this afternoon. I can never be too grateful to the committee for having selected Sir Arthur Cope, for whom, during the nine sittings, I acquired a great affection. The other person whose absence I greatly regret is Dr. Fothergill. His absence to-day is a real tragedy. He was the author of this idea, as he has been the author of so many ideas—perhaps of more ideas which have influenced this Association than anyone except its founder. Dr. Fothergill is a very old friend of mine, a man of whom I have seen a great deal, a man who has developed the gift of letter-writing to a very high degree, a man who has criticized me acutely at times, and whom I have criticized, but I have no more loyal friend in the Association, and certainly the Association has never had a more loyal, devoted, and single-minded member than Rowland Fothergill. (Applause.) I send him this message of thanks and gratitude for all he has done in helping me for many years.

Time is passing, but there are two or three things I must say in relation to the work I have done. Some of the salient features have already been mentioned, but I should like to lay stress upon one or two things which

I would like to feel I have left as a legacy to our Association. I like to think that I have had something to do with the widening outlook of the Association as regards its imperial character. I do not want to suggest that I was the originator of that idea, because when I came to the Association I found Oversea Branches in existence already. But I did feel that we had not as much contact with our Branches over-seas as we ought to have, and I think that by my visits to Canada and South Africa I have done something to bind together the Oversea Branches of our Association with the Association in this country. (Applause.) I always carry about with me a little present given to me by our South African colleagues —a "Christmas card" they called it—in the shape of a gold cigarette case. Our Canadian friends gave me a bronze buffalo, which together with its friendly inscription I shall always cherish.

I should like to thank all of you who are gathered in this hall for the magnificent reception you have given to me. I want to thank every man and woman whose name is in this Book, and when my inferiority complex gets the better of me, as it sometimes does, I shall look at that Book and it will help me to get over it. I do not know but what this "scrap of paper" may not also have some cheering effect. I am very grateful to you, Sir Humphry Rolleston, Sir Ewen Maclean, and your colleagues on the committee, and to every member of the rank and file. Within a very short time I shall have to leave the Association. I cannot conceal the fact that the thought of my impending retirement has given me a very unhappy year. When you have been at a calling which has been practically your only hobby, when you are lonely in life and getting on in years, it is sad to sever yourself from that which has become part of your very existence. But I am leaving the Association in good hands—in the hands of well-tried colleagues. Anderson you all know; he has been my right-hand man for years, and as loyal a colleague as ever a man had. (Applause.) In his hands I am quite certain the Association will go on and prosper. My colleagues on the staff have been kind, devoted, and loyal; and there are some people whom the members who gather at meetings never see, but whose work tells greatly in this Association. I should like to mention all of my staff, but I must mention two of them by name. One of them is my principal clerk, Mr. Coulson, to whom I and the Association owe a great deal, who was here when I came, and I hope he will be here for a good many years yet. The other is my personal secretary, Miss Brookes, and there are many people on this platform who know as I do how much a man owes to a really good personal secretary. I need say no more, except to quote Horace:

"The joys I have possessed in spite of fate, are mine;
Not Heaven itself upon the past has power,
But what has been, has been, and I have had my hour."

(Loud applause.)

APPRECIATIONS FROM OVERSEAS

Dr. E. H. T. NASH spoke of the time when he and Dr. Cox, before the latter entered into officership of the Association, were working together in framing the new constitution of the Association, and said that no one could imagine the burning zeal which Cox brought to that endeavour. If the stones of the Association bore the names of its founders, quite a number of them would bear the name of Alfred Cox, and what he had founded was always well and truly laid. The speaker added that when he heard that a portrait was going to be painted he trembled, knowing the travesties of art on the Academy walls, but he felt that there was one man who could represent the virility of Alfred Cox, and most fortunately that same man was the choice of the Selection Committee.

Dr. T. C. ROUTLEY said how glad he was to be associated with this testimony to a wonderful man. Perhaps he had the more acute understanding of Dr. Cox, because it had been his own privilege for fourteen years to be a medical secretary—for the last ten years Secretary of the Canadian Medical Association. Eight years ago the Association in this country sent to Canada the late Sir Jenner Verrall and Dr. Alfred Cox. Their Canadian colleagues received them with open arms; they were charmed by their presence, and rejoiced in what they had come to do—namely, to bring into the great Imperial family the Canadian Medical Association. That Association had come 220 strong to the present Centenary Meeting. (Applause.) He spoke for all the medical profession in Canada, from Halifax to Vancouver, when he said that they rejoiced in this tribute to the Medical Secretary of the British Medical Association.

Mr. A. J. ORENSTEIN said that his first acquaintance with Dr. Cox was at the Bath Meeting of the Association in 1925, and, talking to him then, he realized that he was the man who could save the difficult situation which was then developing in South Africa. Fortunately the Council agreed to Dr. Cox visiting South Africa, and he fully justified its judgement. He had contributed in no small degree to the fact that there was now in South Africa one Association, which included 90 per cent. of the members of the profession.

Dr. J. NEWMAN MORRIS added a few words, saying that he had come forty days' journey to that meeting. In Australia their association with Dr. Cox, save in the case of a few of them who had come to this country, was by correspondence, but they had appreciated the simplicity and the force of his character. He bore witness to the influence of Dr. Cox on the 4,000 members of Australia. He had helped greatly to maintain the unity of the Association, and had definitely strengthened those ties which (to use the inspired words on the message on the Presidential Chair presented by the Australian Branches) "though light as air were strong as links of iron."

Before the proceedings closed it was agreed, on Sir Humphry Rolleston's suggestion, to send a special message of regard to Dr. Fothergill, with a hope for his speedy recovery.

HEALTH AND SAFETY IN INDUSTRY

HOME OFFICE REPORT

The Chief Inspector of Factories and Workshops, in his report for 1931,* says that he considers the "safety first" movement one of the most interesting developments in industry. He looks forward to the time when there will be permanent standing committees for all principal industries to review periodically the general position regarding accidents. He envisages also the possibility of co-operation by the Factory Department in the work of these committees, assisting them by summarizing the returns of reported accidents, and placing at their disposal experience of the causes and prevention of accidents. As he points out, we no longer believe that accidents are due to machinery and can be prevented by adequate protection; means must be found for dealing with the large volume of accidents which are wholly unconnected with machinery. The "safety first" movement is an educational movement designed to teach both employers and workers how accidents are caused and how they can be prevented.

The total number of accidents reported again shows a decrease, from 144,758 to 113,249, and of fatalities from 899 to 755. The building trade is responsible for the greatest number of fatalities in any one industry, and the majority of accidents were again due to causes in which the human element was the important factor. Accidents to young persons constituted over 16 per cent. of the total, and there is no doubt that many of these would have been prevented if the young people had been fully trained in the operation of their machines. There was no decline in eye injuries, although many of them could have been prevented by some suitable form of protection. A slight increase in the percentage of cases which became septic is attributed to unemployment rendering the workers' hands soft so that they were liable to blister on return to work. The report notes with satisfaction that an increasing number of firms have established a "safety first" organization, and are bringing in the workers

* Annual Report of the Chief Inspector of Factories and Workshops for the year 1931. H.M. Stationery Office. 1932. (Pp. 155. 2s. 6d. net.)

to do their share in accident prevention. Gratifying as this is, it is distressing to learn that such a large number of preventable accidents are still allowed to happen. Conditions of ventilation and lighting are steadily improving, though naturally it takes time to bring the older factories up to date.

The Senior Medical Inspector of Factories, Dr. J. C. Bridge, points out that the low incidence of notifiable industrial diseases, as also of accidents, is partly a reflection on the state of the labour market.

ENNUI IN INDUSTRY

Another sign of the times in industrial life is the absenteeism due to vague, ill-defined nervous disabilities, which Dr. Bridge ascribes to the boredom of the machine workers—a sensation absolutely unknown to the craftsmen of an older age. Repetition processes create a weariness which is not expressed in physical terms but in a desire for temporary relief from an occupation in which the mind is partially or entirely unused. How this state of affairs is to be controlled is a pressing problem of industrial life to-day. Dr. Bridge suggests the substitution of piece-rates for time-rates, promotion for efficiency, rest periods with a change of posture and attention, and bonuses of holidays for unbroken time-keeping. "The uninterested worker," he says, "is an industrial invalid."

Another problem of modern industry is the health of the woman worker, who only too often undertakes in what should be her leisure hours domestic work or home duties which sap her energy. On the whole, the health of women and young persons in industry is satisfactory, but additional facilities for active out-of-door recreation are desirable.

SILICOSIS AND ASBESTOSIS

The Silicosis and Asbestosis (Medical Arrangements) Scheme came into force on June 1st of the year under review, and has drawn special attention to the risks of inhalation in these industries. The Department has obtained much valuable information on the history of fatal cases from sending inspectors to inquests, and several special examinations have been made on disease in various branches of the industry. On an average, asbestosis kills the worker twice as quickly as does silicosis. The victim has usually been employed for about fifteen years in an asbestos works, or forty years in a pottery; on the other hand, he is likely to die after eleven years of sand-blasting and after only seven years in the manufacture of scouring powders. A number of firms have now adopted steel grit instead of the sand for sandblasting, and the results have been uniformly satisfactory, both commercially and hygienically.

METAL POISONING AND FUMES

Even when allowance has been made for unemployment there seems to be a real decrease in cases of lead poisoning, the figure of 168 cases with twenty-one deaths being the lowest on record. Dr. Bridge comments on three cases of lead poisoning which were operated on as acute appendicitis. Of the six cases of mercurial poisoning reported, three occurred in the repair of electric meters, two from the use of mercury as a catalytic agent, and one in making thermometers. Improvements have been made in the industries concerned, and a great deal of definite improvement in the health of the workmen has been noticed.

An interesting case recorded is the poisoning of two men by fumes of cadmium. They were welding a triple compartment steel oil tank, and suffered from an influenza-like condition, with slight epigastric pain and vomiting. This was followed by a feeling of choking, high fever, and sore throat. Investigations showed that the electrodes used each contained 1/50 oz. of cadmium, which volatilized at a temperature somewhat above 315° C.

Some interesting cases of brass-founders' ague occurred in manganese bronze welders. The zinc content of the brass was about 39 per cent., and the flux used was borax. The symptoms were typical: severe shivering, tightness of the chest, shortness of breath, headaches, backache, and profuse sweating. The time of exposure necessary to produce an attack seemed to be between half an hour and three hours. The manganese apparently had no effect on the worker.

Five men who were sinking a caisson cylinder in marshy ground near the Thames died from asphyxia. Analysis of a sample of the air in the chamber showed the composition as follows: oxygen 0.12 per cent., carbon dioxide 14.36 per cent., methane 4.59 per cent; there was no carbon monoxide or other poisonous gas, and death was due to anoxaemia from exposure to an atmosphere containing over 80 per cent. of nitrogen.

Two cases of nicotine poisoning occurred from the bursting of a pipe during the process of pumping nicotine into an absorbent powder. The symptoms included contracted pupils, collapse, rapid but regular pulse, profuse sweating, restlessness, rigors, and nausea. There was evidence that absorption through the skin was the cause of the poisoning.

A number of cellulose painters have been examined, and it appears that there is a definite relation between conditions of ventilation and signs or symptoms of ill-health. Where localized exhaust ventilation is impracticable, the danger may possibly be overcome by using xylol as the diluent to the cellulose paint; a small group of experienced workers suffered little inconvenience and no apparent injury to health under these conditions. The signs and symptoms of local irritation of mucous membranes, together with headache, depression, and fatigue, are thought to be due to the solvents of cellulose and not to the diluent hydrocarbons.

Benzol poisoning was suggested by the examination of a small group of leather dressers engaged in a non-spraying operation. This inquiry is being continued.

SKIN CONDITIONS

All members of the Tar Distillers' Association and some other firms have now instituted periodic medical examinations in the hope of detecting early skin cancers. The medical officers find, however, a good deal of difficulty in persuading the workers to attend; they fear the diagnosis of cancer, fear operation, fear penalization if any defect is discovered, and have a general suspicion that the doctor must be acting primarily for the employer, who has some ulterior motive in instituting the examination. The addition of sixty new cases of epithelioma among cotton mule-spinners brings the total number of recorded cases among these workers to 1,062. During 1931 eight cases of carcinoma of the bladder were reported, five in chemical workers manufacturing scientific dyes and coming into contact with α- or β-napthylamine or benzidene.

The number of voluntarily reported cases of dermatitis maintained the decrease which it had shown in the previous year, and the incidence of some of the more readily controlled cases seems to have been reduced. The alkaline antiseptic used has proved its value, and the incidence of dermatitis among painters appears to be decreased owing to the better knowledge of the value of coating the exposed skin with a film of ointment before work. Alkalis, especially soda and lime, are still the chief causes of skin disease in industry.

RESEARCH FELLOWSHIPS IN TUBERCULOSIS

The Medical Research Council has made the following awards of Dorothy Temple Cross Fellowships for 1932–3, under the terms of the benefaction in that name for research fellowships in tuberculosis:

VERONICA BESSIE FRITH DAWKINS, M.B., Ch.B., Bristol. Resident Medical Officer, Maltings Farm Sanatorium, Colchester.

GORDON MONCRIEFF DEAN, M.B., Ch.B., Aberdeen. Late Department of Surgery, Aberdeen University.

EVELYN MARY HOLMES, M.B., Ch.B., Manchester. Late Assistant Tuberculosis Officer, Welsh National Memorial Association.

JOHN NOEL O'REILLY, B.M., B.Ch., Oxford. Late House-physician, Brompton Hospital, London.

WALTER GRAHAM SCOTT-BROWN, M.D., Cambridge; F.R.C.S., Assistant Surgeon, Throat, Nose, and Ear Department, Royal Free Hospital, London.

Dr. Dean will study problems of tuberculosis at Baltimore, U.S.A., the others at different European centres.

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THE PRESIDENT'S ADDRESS

An attempt to compress the record of a century into the compass of an hour is necessarily a formidable enterprise. Yet a presidential address in a centenary year could hardly avoid the task. Indeed, the choice may well have been judged inevitable. At all events, Lord Dawson has accepted the suggestion proposed by the circumstances, and his address will certainly be welcomed as appropriate to the occasion and as a valuable summary of an important and crowded story. The record of facts means selection and judgement as well as knowledge, and it offers opportunities for comment and inference which propose both general truths and lessons for enlightenment and guidance. While the professed theme is a medical history, this acquires added interest when medicine is placed not in isolation and detachment, but is shown in relation both to the sciences on which it rests and to the fields of thought and action which it influences. Such a survey ought to command the attention alike of the profession and of the public, for without a wide appreciation of medical achievements, aims, and possibilities, medicine as a form of social service cannot possibly attain a full measure of success. As an instrument of education, as well as a summarized historical record, the Presidential Address of 1932 has an appeal to many interests and even to many responsibilities ; it will stand as a prominent feature of the centenary year.

The early years of medical history doubtless seem crude and simple, yet they were not without contributions to human welfare and happiness. Originally, and for long, medicine was necessarily an empirical art. None the less it was a product of observation and the study of nature, though later it was fated, like other arts, to become entangled in magic and mystery. Even to-day, when medical investigations are so largely, and so fortunately, directed by scientific knowledge gained in laboratory researches, it by no means follows that the laboratory is all in all. Here, indeed, is but a partial view of the problem. Following a great master of a previous generation, Lord Dawson insists that the physician is essentially a student of a department of natural history, and, further, that his field of observation is not limited to the study of organic disease, but, on the contrary, extends to all the aspects and relations of the individual patient. The man as a whole, with the peculiarities and idiosyncrasies that give him personality and individuality, forms the problem which the physician has to face. And here manifestly it is experience gained at the bedside which must inform and direct the judgement. Doubtless this experience, in order to attain both width and accuracy, must be directed by training, and it may be that training in clinical psychology has yet much to attain. The point here to be emphasized is that a comprehensive diagnosis —that is, a complete knowledge of the patient in all his aspects—as compared with the mere name of the disease from which he is suffering, involves a knowledge of the man, and not merely a knowledge of the physical and chemical responses which he offers to certain standardized tests. In Lord Dawson's words, " we need to take account of the whole man," while " to give the patient healing " may need much more than a prescription constructed in strict accord with the classical rules and traditions.

Yet modern medicine is marked deeply by applications of new knowledge gained in many scientific fields. The tale of achievement the Presidential Address has compressed into a few paragraphs, and the story is a most impressive one. Fifty years ago bacteriology in relation to disease was hardly a whisper, whereas to-day its aetiological sway is a commonplace of commanding influence, and such names as radium, *x* rays, hormones, vitamins, biochemistry, and filterable viruses, quite unknown to our grandfathers, are familiar as household words to medical students and are discussed with easy grace by all our newspapers. How the discoveries which these names suggest are related to medical practice is a fascinating story, and the record is by no means closed. Further advances in various directions are indeed inevitable, and the more so as the discovery of new truths and new remedies is no longer a happy individual chance. On the contrary, researches with a definite purpose are now organized enterprises, and workers are chosen and guided in order definitely to fill recognized gaps in the body of our knowledge. Combination, co-ordination, co-operation, a planned campaign, and team work are governing influences in research and laboratory organizations. Again, while from these various sources has come a knowledge of many agents having curative properties that are by no means to be despised, the larger ambitions of preventive medicine have been promoted and brought nearer to realization. Conspicuous illustration of this latter proposition Lord Dawson finds in the scientific work which made life and health possible in the Isthmus of Panama, which protected our armies from typhoid during the great war, and which is now being applied in freeing large portions of the earth's surface from the deadly scourge of malaria. Indeed, when the historian comes to his task, the recognition and application of what is conveniently termed "tropical medicine " will certainly be identified as a body of experience of the highest value, both in the scientific and in the economic sphere ; while for the protection and welfare of the individual sufferer anaesthetics and antiseptics, and the curative surgery rendered possible by these, stand conspicuously among the triumphs gained by science and art for the relief of man's estate.

Lord Dawson has no doubt that further and large victories are to be gained. He even challenges the

representatives of surgery when these proclaim that their art has "almost reached the end of its progress"; on the contrary, he urges that the surgical craft has yet large fields to conquer. And generally, he views with confidence and courage the spirit and movement of the age, and makes a strong appeal for a readiness to welcome and adopt new truths. The examples he gives of a prejudiced conservatism which in the past hindered progress and delayed the application of these to the advantage of human life and welfare are impressive, and point their own moral. Not all the obstacles to the beneficial influence of medicine upon the community, however, have come from within the ranks of the profession. For their part, the outside authorities and the public have often been slow to learn. Lord Dawson is of opinion that there might be more corporate teaching by the profession, and claims a body of medical agreement which should render this easily possible. He suggests that the medical faculties of our universities might provide health lectures which would encourage sound educational standards and get rid of "fads and fancies." Here again he reveals his hopeful outlook and his confidence in the substantial agreement of the profession on matters of importance. The proverbial differences of doctors disappear, in his judgement, when compared with the conflicting tongues of the political economists and the contradictory decisions of the lawyers. Yet something may be said for the popular phrase; for the reproach, if so it may be called, is not so much of doctrine as of the application of doctrine in particular circumstances. Where the public judgement goes wrong in this respect is in the conclusion that medicine is without certainty, whereas the right reading of the conflict is that the problems doctors have to face are peculiarly difficult and complicated; and probably the lawyers and the economists are entitled to an equal shelter. There is another aspect of the public mind in relation to medicine to which Lord Dawson makes reference in the early part of his address—namely, the love of magic and the attraction of superstition. He claims that to-day, at least within the profession, we are free from these influences, and that full recognition is given to the need for the study of disease as a part of the biological field and for the exclusion of supernaturalism. But will he make the same claim for the general public? Is there not to-day, even in educated quarters, a ready belief in advertised signs and wonders, in wonderful cures, and in claimants who profess endowment by inspiration rather than by scientific training? If education is the cure for these credulities, it has not yet manifested anything like a full therapeutic success. Perhaps it claims to be sure as well as slow.

Our readers will find in the Presidential Address both information and stimulus to thought. In a rapid review of the century since 1832 it shows medicine recording a large and ever-growing increase of knowledge and of power; a clearer recognition of the scientific bases on which medical practice, alike in its preventive and curative activities, depends; and an extension of the policy which seeks to unite for the common welfare the enlightening influences of a scientific knowledge of health and disease, the application of this knowledge to legislation and administration, and a public opinion which has learned to recognize that mental and physical well-being is not only a personal ambition but also a national and economic asset. What will the orator of 2032 have to record? Doubtless much, and the Presidential Address of 1932 has provided him with an effective starting-point.

PREVENTION AND CURE

Popular fallacies die hard, and the fallacious contrast between curative and preventive medicine is no exception to this rule. No such contrast should ever be drawn, though it has been made only too often, and even with emphasis. There is a difference between prevention and cure, but they are not opposites. At most they are merely aspects of the same thing, and, as such, inseparable. Every illness experienced induces care for the future; every illness cured prevents possible sequels; the results of any research, whether laboratory or clinical, may be both to heal and to avert. Every day the private medical practitioner helps by warning advice, as well as by active treatment or skilful pilotage; and every day the whole-time medical officer is dealing with individual cases of illness. A rational distinction may be drawn, and even a logical contrast set out, between medical activities primarily put into operation in the interests of the individual—or medical practice which is mainly clinical—and those principally directed to the well-being of a community; but this is very far from establishing an antithesis between prevention and cure.

When legitimate distinctions are intended they should be exactly and accurately stated, and it is time that the false contrast should not only be discouraged both in medical and in popular writings and speeches, but ended. It can scarcely survive in the mind of anyone who reads Sir George Newman's presidential address to the Section of Public Health at the Centenary Meeting of the Association, which he has entitled "The private practitioner and preventive medicine," and which we print at page 190 of this week's issue of the *Journal*. In this address Sir George Newman shows, with his usual charm of style and his usual abundance of illustration and example, that during the past hundred years almost all the great advances in what is called preventive medicine have been made possible and actually brought about by private practitioners, and mainly in the course of their ordinary clinical work. There have been some great sanitarians and some famous laboratory workers in this field who were laymen, but in the fascinating story of modern preventive medicine "there is nothing more significant or more illuminating than the constructive service which has been rendered by medical practitioners. It is they who have made the bricks, found the road, explored the facts, carried on the fight, and educated the people

in a way of life. . . . The medical man is an individualist and he is educated by an inductive method. All unconsciously, without losing his individualism and by way of induction, he has been the builder of State medicine and has opened wide the gates of prevention." The exuberance of metaphor merely emphasizes the importance of the achievement. "In every branch of medicine and in every county of England practitioners have placed their names permanently upon a roll of fame as preventive benefactors and explorers." Sir George Newman stresses the further point of the extent and the degree to which general medical practitioners have been enlisted by the State as public health officers mainly for the purpose of the prevention of illness and its consequences to the community. The three broad facts are: the appointment in 1834 of Poor Law district medical officers covering the country completely; the establishment of the national health insurance medical service in 1913, dealing with many millions of the working population; and the continued imposition since 1858 upon every registered medical practitioner of definite statutory duties in regard to prevention. In all these respects the public duties prescribed were preventive and not only curative. "There are no fewer than forty Acts of Parliament which prescribe the powers and duties exercisable by every practitioner in regard to inspection, examination, certification, ascertainment, diagnosis, compensation, insurance, industrial poisoning, dangerous drugs, and childbirth, every one of them with a view to the practice of preventive medicine." Even definite medical officers of health, appointed from 1847, were part-time general practitioners until relatively recent years, and are still largely of that status, while the first appointment of a whole-time medical officer for general purposes as a civil servant did not occur till 1869. Thus progress in preventive medicine has been almost entirely, and in its greatest extent still is to-day, in the hands of private medical practitioners; and it is on their work and experience that the State and local authorities must continue to rely if further progress is to be made.

Finally, as Sir George Newman points out, the impetus towards these preventive movements, and in large measure their initiation, has come from the medical profession itself, especially from the British Medical Association, its representative organized body. As early as 1837 the Association declared with reference to the work of district medical officers that "it should unite an acute perception of the incipient stages of disease with well-directed efforts for its prevention, accompanied by the most diligent and scientific treatment." Thereafter, to give a few illustrations only, it brought about the appointment of the momentous Royal Commission of 1869, proposed the establishment of a Ministry of Health on much of its present lines, initiated the movement for the inspection and treatment of school children, created an effective health insurance service from proposals which were at first chaotic and ill digested, and is now the pioneer towards the establishment of a wide maternity service and of a general medical service for the nation in accordance with approved and tested principles. Collectively, as well as individually, the influence and activity of the private practitioner is not less evident when medicine is viewed in its preventive aspects than when attention is directed to those which are mainly curative.

THE PRESIDENTIAL BADGE

When the British Medical Association last held its Annual Meeting in London, in 1910, after an interval of fifteen years, the Metropolitan Counties Branch presented to the Association a gold badge of office to be worn by each successive President, and it was with this that Dr. W. G. Willoughby invested Lord Dawson when handing over the Presidency on Saturday in the Great Hall. The central feature of the badge is formed by a figure of Hygeia in classic robes and the symbolic snake and cup. The

figure is worked in relief on a blue enamelled background, and is set in an enamelled border, which connects the floral emblems indicating the principal British Oversea Dominions: the maple for Canada, the sugar-bush tree for Africa, the lotus for India, the sugar cane for the West Indies, the wattle-flower for Australia, and the tree-fern for New Zealand. These are mounted on the main framework of the badge, at the extreme points of which are arranged the national emblems—the rose, the thistle, the shamrock, and the leek. The badge is connected to the collarette by a shield bearing the monogram of the Association in red enamel on an ivory ground. The front part of the collarette consists of a series of links with the names, Great Britain and Ireland, Canada, Africa, India, Australia, New Zealand, West Indies, in red enamel, while behind it terminates in a red silk ribbon.

THE FIRST HUNDRED YEARS

Mr. E. Muirhead Little's *History of the British Medical Association*, a copy of which has been presented to every member attending the centenary celebrations in London during the past week, is a very attractive volume. It is bound in green buckram, printed in large clear type on thick paper, and contains many excellent photogravure portraits of those who have most influenced the development and conduct of the Association during its first hundred years, and illustrations, in half-tone and colour, of the buildings occupied by the Association in London and elsewhere. Some indication of the scope and contents of this volume has already been given in these columns in the advance extracts which we have published at intervals during the past eight months. From an account of the profession in 1832, of the foundation of the Provincial Medical and Surgical Association and the formation of the first Branches, Mr. Muirhead Little passes to the agitation for the reform of medical education and the status of the practitioner, which resulted, almost entirely owing to the efforts of the Association, in the Medical Act of 1858 and the amending Act of 1886. One of the longest chapters in the book is devoted to the evolution of the constitution of the Association, which began with the proposal to change the name from "Provincial" to "British," and ended in the decision to admit women to equal membership with men. Mr. Muirhead Little deals no less fully with the work of the Association in the matter of Poor Law reform and public health, and outlines its present policy on questions of State medicine. Of historical interest are the chapters on contract practice, on quackery, and on the Association in the great war, while those devoted to medical ethics, the Association and national health insurance, and hospital administration provide ample evidence of the work which the Association is doing to-day, not only in advancing the status of the profession, but in safeguarding the interests of the general public. A very full description is given of the scientific work of the Association, which includes discussions of scientific topics at the Annual Meetings, the dissemination of information—notably through the *British Medical Journal*—the appointment of special committees to consider and report upon particular aspects of medical science, collective investigations throughout the general body of the profession, the award of scholarships and grants for scientific research, and the organization of lectures to members of the medical profession and to the lay public. It is fitting in this centenary year that we should remember those who have deserved well of the Association during the first hundred years of its existence, and Mr. Muirhead Little includes some interesting notes on the personalities of leaders in varied fields of action whose influence has made itself felt on the growth and welfare of the greatest professional organization in the British Empire. In a brief preface he acknowledges the valuable help he has received in the work of compilation from Dr. Alfred Cox and from the Association's Intelligence Officer, Miss A. L. Lawrence. The frontispiece is a reproduction of the Founder's portrait which was presented to the Association at Worcester on Sunday last. Other noteworthy portraits are those of Lord Dawson, Lord Lister, Ernest Hart, Francis Fowke, Sir Victor Horsley, and Sir Dawson Williams.

SOCIETY OF APOTHECARIES: CENTENARY CELEBRATION DINNER

On July 25th a distinguished company of physicians and surgeons from the British Isles, the Dominions, Colonies, and foreign countries met at Apothecaries' Hall by invitation of the Society of Apothecaries to their British Medical Association centenary dinner. After the loyal toasts had been honoured, Lieut.-Colonel C. T. Samman, the Deputy Master, who presided, read a telegram from the Master, Colonel E. C. Freeman, expressing deep regret that illness prevented him from being present, and then in a brief speech extolled the activities of the British Medical Association during the last hundred years. Welcoming Lord Dawson as the new President, he made a gracious reference to Dr. W. G. Willoughby. They all regretted, he said, the retirement of Dr. Alfred Cox, but were glad to know that he was being ably succeeded by Dr. G. C. Anderson. In conclusion, he made an appreciative reference to the honour bestowed on Sir Henry Brackenbury. Dr. Willoughby, in response to the toast, said that anyone would be proud to dine in the Apothecaries' Hall, and it was a great pleasure for him to return to the City of London. One of the inscriptions of the Society's arms was "Beare with one another," and he hoped that the company present would bear with him. There were two members of the British Medical Association, he said, who deserved especial praise, and they were the Chairman of Council and the Chairman of the Representative Body. He was delighted that so many oversea members had been able to attend the Centenary Meeting. Referring to the pilgrimage to Worcester, Dr. Willoughby said that Sir Charles Hastings had been a great man in public health. The British Medical Association had always worked in unison with the Society of Apothecaries, compared with which it was still in its infancy. They were all sorry, he remarked, to lose Dr. Cox, and everyone from all over the Empire wished him a happy retirement. Dr. Cecil Wall, the senior warden, presented Lord Dawson to receive the Honorary Freedom of the Society. For 117 years the Society of Apothecaries, said Dr. Wall, had been able to grant medical licences, while, at the same time, it remained a City Company. Touching briefly on the history of the City Companies, he recalled that the apothecaries had become separated from the grocers by charter from James I in 1617. Lord Dawson, in response, said that he was very sensible of the honour bestowed on him, which was as much a tribute to the British Medical Association as to himself. He was glad that they had with them that night the Nestor of the profession (Sir Thomas Barlow). The history of the growth of the Society of Apothecaries was a great example of that power to adapt itself to changing circumstances which was so characteristic of the English race. Sir William Willcox presented Sir Henry Dale to receive the Society's gold medal for therapeutics. One of the functions of the Society, he said, was the encouragement of research, and it had already presented four medals for therapeutics. The first award had been made to Professor W. E. Dixon, the second to Sir F. Gowland Hopkins, the third to Professor J. G. Abel, and the fourth to Professor E. Fourneau. One of the most distinguished in therapeutics at the present day was, he said, Sir Henry Dale.

whose career he had watched with interest for thirty years. Sir Henry Dale, in response, expressed his deep sense of gratitude at being the fifth recipient of the medal. Referring to the work of the former medallists, he said that he felt a great sadness at the loss of Professor Dixon. On this occasion the Society of Apothecaries had shown its generosity by giving the medal to a pharmacologist who was divorced from practical medicine. No real progress would be made, he said, until research in the clinic came into close contact with research in the laboratory. Dr. J. S. Fairbairn then presented Mr. Comyns Berkeley and Professor Chipman of Montreal (*in absentia*), for admission to the Mastery of Midwifery (*honoris causa*). Mr. Comyns Berkeley in a brief speech said that any one of his colleagues would be glad to receive the distinction bestowed on him. Dr. Cecil Wall, the senior warden, in proposing "The Visitors," said that Sir George Buchanan, who was to have submitted the toast, was unfortunately absent. He wished especially to include in this toast the guests who had come from all parts of the British Empire. Sir Henry Newland responded in a very brief speech, and was followed by Professor Alexander Primrose. Thus a memorable evening ended, made mellow with good food, good wine, and good company, in the hall of a society which had been granted its charter because three hundred years ago so many "unskilful and ignorant Men, and unexperienced, do inhabit and abide in our City of London, and the Suburbs of the same, which are not well instructed in the Art or Mystery of Apothecaries."

HISTORY OF QUININE

Accepted historical facts may be defined as statements that historians have agreed to repeat. In theory this agreement is the consequence of independent research leading to a common conclusion, but in practice it may result from the fact that it is very much easier to copy than to question, and it may be aided considerably by the sentiment "se non è vero, è ben trovato." The history of the introduction of cinchona bark into Europe is certainly a pleasant story, and it is sad to learn from a recent treatise[1] that research has shown it to be inaccurate in certain respects. The classical story is that Dr. Juan de Vega cured Countess Ana Chinchon, the wife of the Viceroy of Peru, with the newly discovered bark, and that on her return to Spain she brought back a store of the bark and popularized its use in Europe. This story has been current for at least two hundred years, because in 1742 Linnaeus gave the name cinchona to the genus in honour of the countess, and the misspelling of her name was merely an accident. It now appears, however, that Don Luis Geronimo Fernandez de Cabrera, Bobadilla y Mendoza, fourth Count of Chinchon and Viceroy of Peru, was married twice. His first wife, Ana de Osorio, died before he was appointed viceroy and never went to South America. His second wife, Francisca Henriquez de Ribera, went out with him to Peru, but died there in 1641, a year before her husband returned to Spain. Hence neither of these ladies could have introduced the bark into Europe, but the tradition that the Viceroy and his wife were the first important patients to be treated with bark is apparently quite correct. Moreover, the Viceroy did bring back to Europe considerable quantities of bark. Another interesting question is whether the Jesuits discovered the value of the bark or learnt of it from the native Indians. The evidence on this point still remains doubtful. Many authorities who wrote in the first half of the eighteenth century believed that the Indians used the bark, but there is no definite evidence in support of this belief.

[1] Fischl, V., and Schlossberger, H.: *Handbuch der Chemotherapie*, 1932, p. 140. Leipzig: G. Fischer. (Subscription price, M.29; retail price, M.34.)

SURGERY OF THE OESOPHAGUS

Last year Professor G. Grey Turner was invited to give the Henry Jacob Bigelow Lecture at Boston. With the title "Some experiences in the surgery of the oesophagus," it was subsequently published in the *New England Journal of Medicine* (October, 1931). Professor Turner, undismayed by the anatomical elusiveness of the oesophagus, approaches with courage and optimism the surgical problems presented by this organ when diseased. In a review of the methods of treating achalasia of the cardia, he reminded his audience that this disorder was described in 1674 by Thomas Willis, who treated his patient by persuading him to push down into his oesophagus a rod of whalebone with a sponge on the end. The modern variation of this is the mercury bougie. Of the operative measures for the relief of this condition Professor Turner prefers the method of oesophago-gastric anastomosis, which he carries out by the abdominal route. This is preceded by a preliminary gastrostomy, in order to get the patient into as good a state as possible before the bigger operation. Professor Turner suggests that spasm and not failure of relaxation may cause this "disease," saying: "It is not easy to see how the condition can be relieved by making such an anastomosis as I have described unless there is some continued obstruction at its lower end." In his own experience those cases in which the oesophagus was thoroughly loosened up from the diaphragm were not attended with good results. Professor Turner briefly mentioned the oesophageal obstruction occurring in young children between the crossing of the left bronchus and the diaphragm. The majority of these cases clear up spontaneously. In a comprehensive survey of "the most unsatisfactory subject in the whole realm of surgery—carcinoma of the oesophagus"—the lecturer reminded his audience that in Great Britain there were 15,909 deaths from this disease during the ten years 1911–20. The assumption of most workers—that rapid progression and early dissemination were characteristic of this condition—was, he considered, mistaken; probably in 50 per cent. of cases the cancer remained localized for long and did not involve the glands or the liver. The difficulties of dealing with these operable cases are, however, formidable. He gives a detailed description of the technique for removing the whole oesophagus when its middle part is malignantly involved. The oesophagus is tackled from both ends, being approached through the posterior triangle of the neck and the abdomen. Manual separation of the adherent part in the mediastinum, and traction on both ends, results in total extirpation. If the patient survives there still remains the problem of

restoring the oesophagus. Professor Turner quotes H. A. Simpson's case in which oesophageal stricture had followed the swallowing of caustic soda. "The cervical oesophagus was transplanted under the skin to form the upper part of the new gullet, while a loop of jejunum was used for the lower part, the intervening segment being formed from the skin of the chest wall." Professor Turner urges that gastrostomy should be done in incurable cases.

LATE AFTERNOON LIGHTING

There has long been a belief among those who have to approach lighting problems in a practical way that the mixture of artificial light and daylight is not desirable. One prominent lighting engineer writes that in making a satisfactory installation to be used as a supplement to daylight, more light always has to be planned for than is required in an inside room in which artificial illumination alone is used. In other cases it has been a question of serious debate whether it is not better, and perhaps more economical, that daylight should be excluded entirely in the late hours of the afternoon and artificial light alone used. By some it has been held that the mixture of daylight and artificial light is itself deleterious. From the standpoint of the composition of the light it seems incredible that there could be anything especially deleterious to the eye in such a mixture. A series of elaborated tests have been made by Drs. Ferree and Rand at the Research Laboratory of Physiological Optics of the Wilmer Ophthalmological Institute of the Johns Hopkins Medical School, Baltimore.[1] The tests were carried out in a specially fitted optical room, in which every variation of lighting, mixed and pure, could be obtained, and there were proper controls. The reactions of the eyes of the subjects of the tests were ascertained as regards visual acuity, speed of vision, power to sustain acuity, and ocular fatigue. Of the four the second was found to be most useful as an indicator. Tables are given with curves showing the results obtained in the several tests. It was found that so far as the more important visual functions are concerned there is nothing especially deleterious in the mixture of daylight and artificial light from the standpoint of colour and composition, or in the difference in the type of source ordinarily used to supply the components of the mixture. When the light was mixed in equal proportions, and the tests were made at equal photometric intensities at the tests surface, the artificial light gave the poorest result, daylight the best result, and the mixture of the two an intermediate result. The effect was roughly what would be expected from an illumination ranging in colour and composition between daylight and artificial light. A greater total intensity of light is needed to give efficient vision, however, during the late afternoon hours than is required by night or during the day in an inside room. This is because of the high intensity to which the eye has been exposed during the day, and the rapid decrease of the light in the middle and late hours of the afternoon—that is, in its recovery of sensitivity the eye is not able to keep pace with the falling illumination. The deficiency is primarily in the eye, owing to the state of adaptation imposed, and not in the mixture of the two lights. The loss in visual efficiency due to this lag in adaptation can be decreased, and many of the subjective effects due to the abrupt transition from daylight to artificial light can be minimized by providing for a good intensity of artificial light and adding it while the daylight is still high. When the daylight is allowed to become low before the artificial light is turned on, the maximum lag in adaptation is experienced, and the full effects of a sudden and disagreeable change of both intensity and colour of light are produced. When a fairly high intensity of artificial light is used, and it is turned on while the daylight is still high, the effect is that of a gradual transition from one to the other, which is more agreeable to the eye and less detrimental to its efficiency. One of the aims of good afternoon lighting should be to make the transition to artificial light as gradual as possible. By the use of light properly corrected for colour and composition the change from daylight to artificial light can be made unnoticeable.

[1] C. E. Ferree, Ph.D., and G. Rand, Ph.D.: The Problem of Late Afternoon Lighting, *Archives of Ophthalmology*, April, 1932.

A SURVEY OF VITAMINS

The Medical Research Council is publishing this week, as No. 167 of its Special Report Series, a volume of 332 pages, with illustrative plates, entitled *Vitamins: A Survey of Present Knowledge*. This has been compiled by a committee appointed jointly by the Lister Institute and by the Medical Research Council, and it is published by H.M. Stationery Office at 6s. 6d. net. The report now presented is an entirely fresh resumption of current knowledge and of technical methods in this subject, Dr. Arthur Harden acting as general editor. The report of the International Conference on Vitamin Standards, held in London in June, 1931, is printed as an appendix. Further reference to this important publication will be made in a later issue.

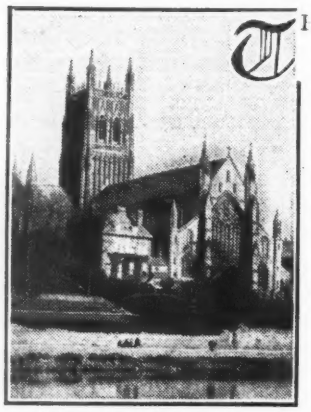
MEDICAL RESEARCH COUNCIL

By an Order of the Committee of Privy Council, made after consultation with the Medical Research Council and with the President of the Royal Society, Professor A. E. Boycott, D.M., F.R.C.P., F.R.S. (Graham professor of pathology at University College Hospital, London), and Professor E. D. Adrian, M.D., F.R.C.P., F.R.S. (Foulerton professor of the Royal Society and Fellow of Trinity College, Cambridge), are appointed members of the Medical Research Council in succession to Professor Robert Muir, M.D., F.R.S., and Sir John H. Parsons, C.B.E., D.Sc., F.R.C.S., F.R.S., who retire in rotation on September 30th after four years' service.

The *London Gazette* of July 26th announces that the King has made the following appointments: Sir E. Farquhar Buzzard to be a Physician in Ordinary to His Majesty, in the room of Sir Humphry Rolleston, resigned; Sir Humphry Rolleston and Dr. Maurice Cassidy to be Physicians Extraordinary to His Majesty; Dr. J. A. Ryle to be Physician to His Majesty's Household, in the room of Dr. Cassidy.

The Pilgrimage to Worcester

CENTENARY CELEBRATION IN SIR CHARLES HASTINGS'S CITY



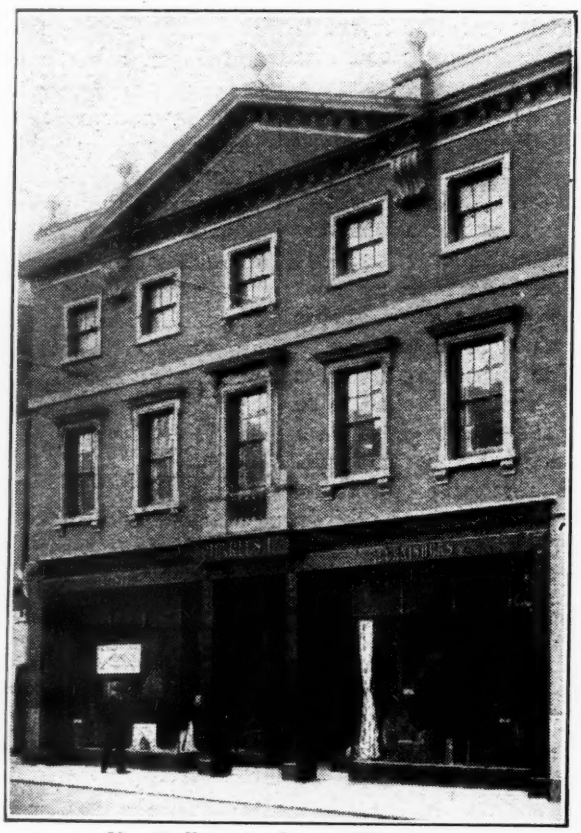
WORCESTER CATHEDRAL.

THE pilgrimage to Worcester took place on Sunday, July 24th, when members of the British Medical Association paid homage to the memory of Sir Charles Hastings, who was not only the founder of the Association, but one of Worcester's great citizens. The visit thus fell within five days of the hundredth anniversary of the inaugural meeting, on July 19th, 1832, in the board room of Worcester General Infirmary, which many of the pilgrims visited. The cathedral clergy, the civic authorities, the local Division, various kindred institutions, and the citizens generally combined in the most generous of welcomes to the party of just over four hundred which left Paddington early in the morning by special train. At Worcester they were joined by many others who had come from various parts of Great Britain, Ireland, the Dominions, and Colonies. The visitors from London were met at the station by Her Worship the Mayor (Miss Diana Ogilvy) and other members and officials of the city council, and by the chairman (Dr. H. Neville Crowe) and the honorary secretary (Mr. Mark Bates) of the Worcester Division.

UNVEILING OF MEMORIAL TABLET

The first ceremony took place at No. 43, Foregate Street, now occupied by a large furnishing firm, where Dr. W. G. Willoughby, the Past President, unveiled a Doulton tablet bearing the inscription:

B.M.A.
SIR CHARLES HASTINGS
1794–1866
FOUNDER OF THE
BRITISH MEDICAL ASSOCIATION
LIVED HERE



NO. 43, FOREGATE STREET, WORCESTER

Addressing the assembly from the first-floor window, Dr. Willoughby said:

We members of the British Medical Association are pilgrims to this historic city of Worcester. We have come from all parts of the Empire to do honour to Sir Charles Hastings, founder of the Association. There is to most of us a fascination in visiting scenes where great deeds have been done, and where great men have lived and carried on their work; and the work of Sir Charles Hastings was indeed a very great work, for in the medical profession he laid the foundations of great things to come, and brought order out of chaos. His work was not merely for his own profession, but for the benefit of mankind. This is not the time nor the occasion to give you a long dissertation on Sir Charles Hastings. The inhabitants of Worcester probably know even more about his history than I do. But in this historic city events from time to time have happened which have altered the course of English history, and I can assure you that the work which Hastings did here altered the course of history also. My duty is a simple one. I am going to unveil a tablet which has been put up to show that he lived in this house. By this tablet passers-by will be reminded, if they are members of the medical profession, of the man who obtained for them the status they at present hold, and perhaps the layman who sees this tablet will recall that Hastings laboured, not merely for the profession, but for the public health, and that he himself and his fellows owe not a little of their health and happiness to the foundations which Hastings so well and truly laid.

PROCESSION FROM GUILDHALL TO CATHEDRAL

The visitors then proceeded to the College Hall, where they robed. The procession started from the Guildhall, the old eighteenth-century building in the High Street. First came the civic procession, with the Mayor, preceded by the sword-bearer and attended by other officers; behind her were the aldermen and councillors. The Association procession followed, headed by the mace-bearer. The procession was led by the President, the Chairman of the Representative Body, the Chairman of Council, the Treasurer, the Past President, the President-Elect, the Deputy Chairman of the Representative Body, the Past Chairman of Council, the Honorary Local General Secretaries, the Chairman of the Worcester Division, the Vice-Presidents, the Gold Medallists, the Central Officials, the Presidents of the Federal Committees, the Chairmen of Standing Committees, the members of the Central Council, Honorary Members of the Association, distinguished foreign guests and foreign corresponding members, and the Presidents of Branches and Chairmen of Divisions, oversea and home. Then came the general body of members.

In the cathedral the Dean and Canons met the procession at the west door. Places in the choir were reserved for the nurses of the Worcester General Infirmary. The service began with the Lord's Prayer, followed by the chanting of the 103rd Psalm. Lord Dawson was then conducted to the lectern, and read the lesson from Ecclesiasticus xxxviii, the passage beginning "Honour a physician with the honour due unto him." After the lesson the Dean and other clergy, followed by the President and the principal officers, the Mayor of Worcester, and the Lord Lieutenant of the City and County (Viscount Cobham), walked to the north aisle of the nave, where the memorial window was unveiled. The window, a reproduction of which appears on page 215, contains in the centre panel the figure of the beloved physician, St. Luke, and on either side a

representation from the parable of the Good Samaritan. The inscription states:

> The British Medical Association on the celebration of their Centenary gave this painted window as a memorial of their Founder, Sir Charles Hastings, Physician in this city.
> 1932.

The President (Lord Dawson), in unveiling the window, said:

"To keep in grateful remembrance the name of our Founder, Sir Charles Hastings, Doctor of Medicine, a citizen of Worcester: and to commemorate the Centenary of the British Medical Association, I unveil this window, the gift of members of the Association, to Worcester Cathedral."

The Dean (Dr. Moore Ede) responded:

"We gratefully accept the gift, and dedicate it to the honour of God and the enrichment of His sanctuary."

Prayers were then said, ending with the ascription:

For the life and example of our Founder, Charles Hastings,
We give thanks to Thee, O God.

For a hundred years of beneficent activity guided by Thy wisdom and enabled by Thy Power,
We give thanks to Thee, O God.

Sir Hubert Parry's anthem, "I was glad when they said unto me," was rendered by the choir.

HASTINGS MEMORIAL WINDOW, WORCESTER CATHEDRAL.

THE BISHOP OF BIRMINGHAM'S SERMON

Bishop Barnes took for his text the words "Honour a physician with the honour due unto him." He said that at the time this was written the works of Hippocrates were already more than two centuries old. Three more centuries were to pass before Galen composed the portentously diffuse works which embodied the medical knowledge of the early Roman Empire. After Galen's death the twilight of human thought came on apace. The dark ages began, and the torch of science flickered out. But in due course man's passion for knowledge gradually reasserted itself. The true beginning of the modern era might be dated from the mid-sixteenth century, with the work of Copernicus in astronomy and of Vesalius in anatomy. Less than three centuries passed between the time when Vesalius discovered a new world and the year 1832, when Hastings founded the British Medical Association. During those centuries the human mind, freed from the heavy shackles of mediaeval authority, advanced at an increasing rate to ever new conquests. If the modern world had thrown up no equal of Hippocrates, it had produced Pasteur, Lister, and Simpson. In medicine progress had been less wonderful than in surgery, but one disease after another had been conquered. Vaccines still remained perplexing and half empirical, but biochemistry and Mendelian heredity were new sciences of great promise, and in fact the new biology exhilarated by its possibilities. If progress continued, advancing knowledge might not only give to humanity a great measure of immunity from disease, but it might enable man to make of his children a race finer than the earth had known.

The preacher then sketched the career of Sir Charles Hastings, who, he said, was remarkable for his insight in two directions.

"He saw, on the one hand, that circumstances were ripe for an advance in the status and organization of the medical profession, and that such improvement was bound up with the increase of medical knowledge and skill. On the other hand, he realized that the progress of medical science depended upon original investigation, the unprejudiced search after truth. . . . He never failed in his conviction that the advance of the medical profession was bound up with the advance of medical science; and the British Medical Association owes its distinctive character, and the regard in which it is generally held, to the impress which it received from Hastings's wise perception."

Doubtless there had been in England other country practitioners who had dreamed dreams and seen visions. Hastings was fortunate in that his dreams came true, his visions took shape in fact. During the nineteenth century conditions for medical research became increasingly favourable. The rise of the newer universities greatly improved the status of the medical schools, and to-day medical research was not only well organized, but subsidized by the State. Optimism with regard to the future was great. It was expected that every decade would give to the profession an increased power to control disease. But was the future indeed so roseate? There was always the fear of reaction. New aspects of truth often bewildered men and aroused their instinctive opposition, and so, bewildered, they returned to old superstitions slightly disguised.

"Probably before many years have passed our knowledge of human heredity will have so increased that we shall know how, by preventing the birth of children to certain persons, to raise the quality of our population. Will pseudo-religious prejudice not impede the good work? Does all the present objection to the sterilization of the feeble-minded rest upon defensible scientific doubt? Any textbook on the warfare between science and theology will indicate similar oppositions that may easily arise. Mistaken religious prejudice gave strength to the clamour against inoculation and vaccination when such measures against small-pox were first introduced. The severity of the disease and its prevalence have so greatly diminished

that the need for compulsory vaccination is less than of old. But fanatical objections to it still survive. Furthermore, there exists in this country organized hostility to all experiments on living animals, and sometimes this hostility is accompanied by widespread misrepresentation. We rejoice that our civilization is reaching a stage when every good citizen will object to all forms of cruelty and will refuse to allow the infliction of unnecessary pain. Such ideals have already created the stringent restraints of the law under which vivisection experiments now take place. But if our leaders of medical research are to conquer the dread diseases which now cause incalculable agonies to humanity, they must be allowed such restricted liberty as they at present possess. To prohibit their researches under the plea of kindness to animals is to proscribe the search for truth."

The prejudices and superstitions which at any time might arise to check the progressive conquest of disease were often rooted in mistaken religious ideas. Always, too, the impatient sufferer tended to resent the ignorance associated with half-won knowledge, and so there arose a demand for superstitious medicines and a belief in faith cures. Visits to sacred shrines flourished as luxuriantly now as twenty-five centuries ago. Yet if cures could be wrought by visits to places supposed sacred to some goddess or saint, rational medicine must be abandoned. In his own Church there was a demand for services wherein the sick would be anointed with oil. With such services there would most certainly be associated the irrational belief that consecrated oil had, by virtue of its consecration, a therapeutic value. Such disquieting facts must be considered in conjunction with other quasi-medical, quasi-religious developments of the time.

"If evil be non-existent, and pain a mere fancy of the mind, as one highly successful form of religious teaching asserts, medical research is, of course, valueless. . . . Unfortunately, the religious history of Europe for the last two thousand years shows that religious teaching, resting upon ideas which are not true, can exercise great power for prolonged periods. Even during the last four centuries the free search for truth has been impeded—sometimes gravely impeded—by superstitions and false dogmas."

In conclusion, the Bishop urged social leaders and religious teachers to join with men of science in emphasizing continuously that man had been endowed with his rational powers in order that he might, by the discovery of truth, find the Kingdom of God. Search for truth was a slow and laborious process. Experiment, investigation, and statistical inquiry were all needed. He who would liberate his mind from tradition must acquire complete freedom of thought. Just so far as knowledge rested securely upon experiment and observation, while, in addition, spiritual experience had been rightly interpreted, there would be no necessity to revise either the religious faith or the laws of nature which served their fathers. Science by its very nature was progressive. Faith likewise was not final and static, but the more worth holding because it was dynamic. As it changed, it became the more inspiring. Many had a pathetic craving for a final assurance in matters of belief, and would even prefer error to uncertainty.

"We must be resolute in our insistence that any faith which fails to be loyal to truth is a dangerous snare. . . . Through knowledge, which is God's revelation of Himself, we find God."

After the sermon, the hymn "Now thank we all our God" was sung, and an offering was received, to be divided between the fund for the enlargement of Worcester Infirmary and the charitable funds of the Association.

THE ROMAN CATHOLIC SERVICE

At the same time as the service in the cathedral High Mass for Roman Catholic members was celebrated at St. George's Catholic Church. About twenty members of the Association and their ladies attended, with five members of the City Council. The celebrant was the Rev. Father Gibb, and the preacher the Rev. Father Martin D'Arcy.

LUNCHEON ON COLLEGE GREEN

After the services luncheon was served in a marquee erected on College Green. A company of 700 sat down to the excellent luncheon provided. The chair was taken by Dr. Neville Crowe, chairman of the Worcester Division, and those at the principal table included Lord and Lady Dawson, the Mayor, the Lord Lieutenant, the Bishop of Birmingham, the Dean of Worcester and Mrs. Ede, Sir Henry and Lady Brackenbury, Dr. E. K. Le Fleming, Mr. and Mrs. Bishop Harman, Dr. W. G. Willoughby, Mr. and Mrs. Mark Bates, Dr. G. W. Crowe (father of the Chairman, Vice-President of the Association, and Honorary Secretary of the Jubilee Meeting in Worcester in 1882), Mr. W. G. W. Hastings, head of the Hastings family and grandson of Sir Charles, and the Rev. J. F. Hastings of Martley, of which Sir Charles's father also was rector. The Hastings portrait, which was presented to the Association, was on view, together with the replica painted for the Hastings family.

THE HASTINGS PORTRAIT

Dr. NEVILLE CROWE extended a hearty welcome from the Worcester Division. It was a great regret to the Division, he said, that the accommodation did not permit of the Centenary Meeting being held in that city, as the inaugural and jubilee meetings had been held, but honour had been done to Worcester by this pilgrimage. There were only two men now living who took a prominent part in the jubilee meeting; one was Colonel William Stallard, who was mayor of the city at that time, and the other was the speaker's father, who was honorary secretary of the meeting, and was well and active enough to be with them that afternoon. His own position as chairman of the Worcester Division was due largely to the generosity of the members, who, knowing that his father, owing to advancing age, was unable to take on the duties, very kindly elected him in his stead. He added that he and his father had lived in the house Sir Charles Hastings had occupied. He said that the Hastings portrait had come into the possession of the Division in a somewhat roundabout way. It had passed to the present head of the family, Mr. W. G. W. Hastings, who had been for many years abroad, so that the portrait hung in the office of the family solicitor. There Dr. G. W. Crowe saw it, and suggested that perhaps at some future time it might be presented to the Association. Dr. Devereux of Malvern, then Chairman of the Division, and Mr. Mark Bates, now Honorary Secretary, conceived the idea of asking the family to present the portrait to the Worcester Division on the occasion of the Centenary, and Mr. Hastings consented on certain conditions, the chief of which was that the portrait should be handed over by the Division into the safe keeping of the Association at their House, and another, that a replica should be prepared and kept as a heirloom in the family. A copy was made accordingly by Miss Lloyd, a member of the Hastings family. The original portrait was painted by R. B. Faulkner in 1839, a North of England artist, who died before he gained the fame that he deserved, and it showed Hastings in the full vigour and attraction of his handsome maturity.

Lord DAWSON, in receiving the portrait, first thanked the Worcester Division for its hospitality. He thanked the Dean (who was a special friend of the medical profession, for he had given members to it who were distinguished and highly esteemed) for the cathedral service, the Bishop of Birmingham for his stimulating and in-

spiring sermon, and the organist for his fine music. He thanked Mr. Hastings also for the portrait, which would be an inspiration to many, and ensure for the founder a lasting remembrance.

Sir HENRY BRACKENBURY proposed "The City of Worcester and the Memory of Sir Charles Hastings." He echoed the words of the President in speaking of the debt they were under to the Division and to the ecclesiastical and civic authorities of Worcester for their welcome. Worcester had to the full the charm and fascination which every old cathedral city more or less possessed. Worcester was a beautiful city, and famed for the making of beautiful things. The association of that beauty with historic events enhanced the pleasure it afforded. Worcester had not only witnessed historic events, but had seen historic personalities, and among them a very high place was held by Sir Charles Hastings. He was not born there, nor did he die there, but he lived there during practically the whole of his adolescent and working life. In the somewhat easy fashion of those days, when he was 18 years of age, and had no medical qualification other than a year's apprenticeship to a medical man, he wished to become house-surgeon or resident medical officer of the infirmary. That officer, contrary to the present custom, was elected by a certain number of governors of the hospital, who at that time numbered about 300. This young man, in competition with a well-known and qualified local surgeon, made it his business to go about the roads on horseback and canvass for the votes of the whole of those 300. He was thereupon elected by a majority of one! But his supporters on that occasion never regretted their choice. About six years later he came back for the more orthodox appointment of physician to the infirmary with full qualification, which he had obtained in Edinburgh, and the wider experience which he had gained there and elsewhere. His appointment as honorary physician at the infirmary at Worcester was another notable event in the history of the city. He lived there, doing good to the town and neighbourhood, for very many years thereafter. It was a singular fact that there were two main interests in Sir Charles Hastings's life apart from the actual practice of his profession, and both of them illustrated points which were now being very seriously considered in connexion with the education and training of the medical man. He believed in the study of biology, and was a great natural historian, and to-day it was widely felt that the connexion between the study of biology and the medical sciences should be improved and accentuated. He was also profoundly interested in the psychological aspects of medicine, and to-day it was being realized more and more that those aspects were very important, both in the training of the medical man and for the treatment of his patients. That emphasized the exceptional character of the man, that in those days he was interested in those two branches of science, and it was perhaps only to-day that the intimate connexion which those two branches had with their daily work and study was being understood. He was a fine man, a considerable scientist, an excellent physician, an inspiring organizer, a beloved friend and neighbour, and in every sense of the word a good citizen.

The MAYOR OF WORCESTER, who responded to the first part of the toast, said that Worcester did feel proud that one of her citizens should have had the inspiration and imagination to appreciate the benefits which would come from such a great organization as the one now celebrating its centenary. Her thoughts, however, went back, not for one hundred years, but for a thousand years, to the time of St. Oswald, who in some way brought healing of mind and body to very many. Worcester was proud that her early history was linked with him. How he carried out his healing art she did not know, she could only guess; perhaps the Bishop of Birmingham would not agree with what she had in mind. St. Oswald had certain powers and qualities dimly discerned through the mists of time, but were they not in essence the same as those which characterized in these modern days the members of this great profession? As a laywoman she desired to pay a tribute on behalf of the laity to the modern doctor.

Mr. W. G. W. HASTINGS, who also responded, mentioned that his grandfather was one of a family of fifteen, and when he added that one of that fifteen was a father of ten, it would be appreciated how many were the ramifications of the Hastings tree. He had been very pleased to hand over the portrait, and at the same time he would treasure the replica, which, with some family pride, he believed to be a very good one. He had, of course, no personal recollection of his grandfather, and there were very few people alive to-day who had. A niece still survived, but her health—she was 87—prevented her from being present that day. From conversations he had had with her, he gathered that Sir Charles was to children an exceptionally likeable companion, and it was known from the records of the city of Worcester that he earned the respect and confidence of the citizens. Indeed, when the city was threatened with an outbreak of cholera, the Mayor and Corporation gave him powers equal to those of a Mussolini, and he promptly issued such drastic orders in the matter of sanitation and the removal of some of the inhabitants to places outside the city that the plague with which the city was threatened was stayed. He was for forty-nine years physician to the infirmary, and when he left that position it was amid the regrets of all who had known him. The speaker concluded by remarking on the pride, and perhaps the astonishment, with which Sir Charles Hastings might look down upon that day's ceremonies. He hoped that at the bicentenary of the Association it would come again to Worcester, and that some descendant of the Hastings family would represent it on that occasion.

At the close of the proceedings many of those present repaired to the Guildhall, where the Mayor received guests for two hours and entertained them to tea. Others went in motor coaches to visit the brine baths at Droitwich Spa, and another party went to the Besford Court Catholic Mental Hospital and Training College for Boys and Youths. For those who remained in Worcester there was a visit to be paid to the historic board room of the infirmary and to the Hastings Natural History Museum at the Victoria Institute, while the Worcester Royal Porcelain Company invited the visitors to see its beautiful ware.

AFTERNOON EXCURSIONS

A large number of members and ladies visited Droitwich Spa, where they were welcomed in the Brine Baths Park by the civic authorities, the manager of the spa, and the leading medical practitioners. Parties were conducted over the spa buildings—now undergoing enlargement and renovation—and great interest was shown in the arrangements for the comfort and treatment of patients. The clinic, where patients can be housed and treated at very moderate inclusive fees, received warm approval. After tea Mr. W. MCADAM ECCLES voiced the thanks and appreciation of the visitors. He remarked on the cordial reception given by all concerned, and in particular mentioned Dr. John Wilkinson and Dr. Malcolm Campbell, who had done much to bring Droitwich to so high a position among British spas. He believed that such wise decisions would eventuate in causing the British people to make the fullest use of their own spas for their own benefit.

Several motor coaches left Worcester for the Besford Court Catholic Mental Welfare Hospital, a few miles away, where the visitors were received by the administrator, the Right Rev. Monsignor Newsome, and found much

to interest them in the beautiful old manor house, which is used for the education of defective children. In a ten-minute lecture the administrator explained the principles governing the educational system, and visitors were greatly impressed by the craft school, the psychological and other clinics, and the general life of the institution.

Those who remained in Worcester paid a visit to the Board Room of the Infirmary, where the British Medical Association had its origin on July 19th, 1832. Several relics of Hastings were inspected, and in particular there was shown with some pride the first volume of the *Provincial Medical and Surgical Transactions*, which contained Hastings's inaugural address, and the resolution of the meeting: "That the able and luminous discourse this day read by Dr. Hastings to the meeting be printed and sent to every member of the Association, and that it also form the introductory article of the first volume of the Transactions."

A small party also visited Astwood Cemetery, where Sir Charles Hastings is buried. The tombstone has now been restored by the Association out of the Sir Charles Hastings Memorial Fund, and the lettering, which was nearly illegible, is now easily read.

The pilgrimage ended soon after five o'clock, when the special train left for London. Those who were privileged to share in the events of the day will long carry the recollection of a city honouring one of its great men and welcoming those, from far and wide, who are the children of his vision.

The view of Worcester Cathedral is from the *City of Worcester Official Handbook*, published by Littlebury and Co., Ltd., Worcester Press, Worcester.

PREVENTION OF TUBERCULOSIS

CONFERENCE IN LONDON

Sir ARTHUR STANLEY presided over the eighteenth annual conference of the National Association for the Prevention of Tuberculosis, which was held at University College, London, on July 21st and 22nd.

The opening ceremony was performed by Sir ARTHUR ROBINSON, Secretary to the Ministry of Health, who commented on the immense advances which had resulted from Koch's discovery of the tubercle bacillus. He reviewed the various lines of progress, and commended Dr. McNalty's recent report for fuller details. Brought into being by such a pioneer as Sir Robert Philip, the National Association had played an increasingly prominent part in educating the public. Voluntary assistance of this sort would always be necessary in the health and educational services. The Association, Sir Arthur added, would do well to advertise more widely the educational facilities it offered, for tuberculosis was largely a disease of ignorance, and therefore preventable.

Sir ROBERT PHILIP, moving a vote of thanks to Sir Arthur Robinson, drew attention to the sympathy with tuberculosis workers which had been indicated in the speech, and to the encouragement which could be derived from the falling death rate—particularly marked in counties and districts where the campaign against this disease was being most actively pressed. Professor LÉON BERNARD, who seconded the motion, commended the work of the International Union, which linked together fruitfully the various national anti-tuberculosis organizations. New methods of treatment were being devised, and individual as well as collective co-operation between tuberculosis workers would definitely accelerate the campaign against this disease.

THE INFLUENCE OF KOCH'S DISCOVERY

Three papers on the influence of the discovery of the tubercle bacillus by Robert Koch were then contributed. Dr. R. A. YOUNG described the simple equipment with which Koch worked, his untiring prosecution of his quest, the ingenuity of his methods, and the various stages of his investigations. He recalled the story of Frau Koch, who saved enough money from her small domestic allowance to buy a microscope for her husband. There was reason to believe that Koch had been persuaded against his will to publish prematurely his researches on tuberculin. Possibly, added Dr. Young, Koch's earliest work on tuberculosis was achieved almost too quickly, since it covered little more than a year. The problems of tuberculosis were hard, and fifty years had not sufficed to solve them.

Dr. W. C. WHITE, chairman of the Committee of Medical Research of the National Tuberculosis Association of the United States, conveyed warm greetings from across the Atlantic. He then illustrated the various ways in which Koch's discoveries of the anthrax bacillus, wound micrococci, the tubercle bacillus, and the cholera vibrio had brought preventive medicine into being. Such activities as the purification of water supplies, disposal of sewage, provision of clean food, and the prevention of many diseases had sprung from this beginning. Moreover, Koch had had much to do with the works of Behring and Kitasato, which led to the isolation of diphtheria antitoxin, and the commencement of the science of immunology. Although he had formed an erroneous view about the risk of bovine infection, the interest aroused by his statement, based unfortunately on unfinished work, had, nevertheless, led to other investigators taking up the subject, and eventually reaching more accurate conclusions. Dr. White added some details of a more personal kind about Koch's character, and closed by summarizing the sequels of his work—namely, the preventive and therapeutic achievements of Sir Robert Philip in Great Britain and Hermann Beggs in New York; studies of the synthesis by bacterial strains from inorganic media of nearly all the proteins, carbohydrates, and lipins found in plants and animals; and the immense growth of epidemiology and of specific methods of disease control.

Sir HENRY GAUVAIN followed with a consideration of the influence of Koch's discovery in the treatment of surgical tuberculosis. Nowadays extensive surgical operations were diminishing in numbers, a direct result of the change in outlook which the isolation of the tubercle bacillus had brought about. Rest had become the more important therapeutic principle, and the way in which it operated in conjunction with fresh air, good food, and sunlight was now understood—thanks to the researches which Koch had initiated.

PROTECTION OF THE YOUNG ADULT

In the course of a discussion of protection from tuberculosis of the young adult, Dr. F. J. H. COUTTS pointed out that infection in adolescence and early adult life was a very serious social and economic disease. Although there had been a decline in the general mortality from pulmonary tuberculosis at all age periods, a definite slackening in its pace had occurred between the ages of 15 and 25; this was more marked in London than in rural areas. The onset of puberty could not be accepted as an adequate explanation of this phenomenon in the absence of any evidence of changed conditions in this respect since last century, which had witnessed a rapid fall in mortality at this particular early age. Industrial conditions, and particularly the entry of a larger proportion of females into industrial life, had probably tended to increase this disease in young adults. A more important point for study was the so far unknown cause of the non-production of immunity in some cases despite previous attacks of tuberculosis; an increase in immunity should, therefore, be manifest at this particular stage in life. It seemed undeniable that tuberculosis in childhood established some kind of immunity, and Dr. Coutts believed that to a considerable extent the recent relative increase of pulmonary tuberculosis in young adults was due to a larger proportion of persons reaching this age without having previously acquired and recovered from tuberculous infection. Some form of preventive vaccination to produce immunity was therefore indicated, and early diagnosis and treatment were very important.

Dr. NOEL D. BARDSWELL contributed statistical evidence of this check in the fall of the death rate during

adolescence and young adult life. In London this particular increase in incidence of pulmonary tuberculosis among women between the ages of 15 and 25 was first observable about 1901, and the percentage death rate rose during the following years. It was very largely limited to the unmarried, and some of the causes might be fatigue arising out of the employment, lack of adequate rest at night, neglected colds, and unsatisfactory meals.

Dr. JAMES WATT, however, thought that infection, even repeated, had less to do with the incidence of tuberculosis than had been thought ; this was shown by the relative infrequency of conjugal tuberculosis. Faulty nutrition and the adverse conditions of industrial life seemed to be the two most important predisposing causes of the disease ; with these must be associated continued overstrain of any kind, and faulty metabolism, due to lack of exercise and sedentary life. Overcrowding in the home was another factor to be remembered. Attention should be directed to the inculcation of better ideas as regards food, the ventilating and heating of offices and workplaces, and the securing of a proper balance between rest and exercise. Dr. Watt thought that neglect of the simple rules of health was primarily responsible for tuberculosis in the young adult. Periodical medical examinations, he added, would be a really useful protective measure.

Dr. F. R. G. HEAF remarked that the young adult apparently started with a balance of resistance against the disease, and agreed that he ought to be taught the importance of obtaining sufficient food and rest and of leading a healthy life. Pride in his physical condition ought to be instilled, and the value of earlier retirement to bed at night.

Dr. W. M. MACPHAIL commented on the large number of experienced practitioners who had had little experience of tuberculosis in adolescence. Tuberculosis workers, similarly, had detected only a relatively small number of infected cases in early adolescence. Gross forms of the disease might be uncommon at this stage, but infection was often present, and might even have progressed to a very considerable degree in the entire absence of symptoms. He agreed with the desirability of arranging for medical examinations between the ages of 14 and 16, and added that there was a gap in medical care between the school medical supervision, which terminated at 14, and that under the national health insurance scheme, which began at 16. On this critical age period attention should be more keenly focused. Dr. MacPhail added that his conviction in this respect was being continually strengthened by his work at Burrow Hill Colony, where he was certain that a very practical part was being played in the protection of the young adult.

CONTINUITY OF CARE

Miss EDITH MCGAW, honorary secretary of the Paddington Tuberculosis Dispensary, described the social conditions in the area served by this dispensary, and pointed out that the work of the Care Committee began from the first moment that any member of a family was found to be suffering from tuberculosis. It included every member of that family, whether ill or well, and ceased only when each member could be given a clean bill of health, their home had been restored on physiological lines, and their employment could be considered suitable. The dispensary medical officer, nurses, and secretary must therefore be members of the Care Committee, and regular attenders at its meetings. Examination of contacts was vitally important, and some institution such as Kensal House School (the open-air school for tuberculous children) was essential. Such supervision should be continued into adolescence and adult life, and include necessary dental work, as well as adequate *x*-ray examinations. Continuity of care in tuberculosis was one of the best ways of promoting the health and stability of the nation.

Dr. R. SEPTIMUS WALKER concentrated on the medical side of continuity of treatment, with special reference to Paddington Dispensary. He regarded as prophylactic measures of the first importance the determination of early infection in the child by frequent skin and *x*-ray examinations. A care organization should provide for pre-natal as well as for post-natal measures. The removal of a newborn infant from its tuberculous mother, or from danger of infection from elsewhere, was urgently indicated, and more powerful legislation was needed with regard to the control of refractory, highly infectious cases. While the continuous supervision of mothers and children was relatively easy, this had proved very difficult when applied to young adolescents and men ; the Burrow Hill Colony was filling a useful gap in dealing with the young tuberculous worker. The patient who had left the ordinary type of sanatorium had often a lack of confidence and a reluctance for return to work ; convalescent or holiday homes for such patients would be very useful. Miss MARX (lady almoner of the Brompton Hospital for Consumption) emphasized the greater opportunities for the prolongation of life which were afforded by the new methods of treatment, and the need of keeping in touch with cases for purposes of research. Annual reports, which had been obtained from 6,000 patients who had passed through the hospital and sanatorium, were now forming the basis of a number of investigations of considerable practical value. Continuity was an essential in any care and after-care scheme, and close touch should be secured by maintaining a very friendly relation with the patient. At present the scheme of after-care was far from being complete ; one step necessary was the facilitation of the passage from one dispensary to another of full medical and social records. Dr. S. D. ROWLANDS described the conditions in Gateshead, where there was a high incidence of tuberculosis associated with the serious unemployment problem. Material assistance was urgently necessary, and an after-care committee had been formed about eighteen months ago in conjunction with the local branch of the Social Service Council. This was operating very effectively as regards the prevention of disease, the continuation of treatment and supervision, and the education of the general public.

Councillor WALTER TAYLOR, chairman of the Standing Conference of Metropolitan Borough Tuberculosis Care Committees, described the formation and method of work of these bodies, and gave illustrations of their value in ensuring continuity of care. Handicraft classes had been organized in about a dozen London boroughs with increasing success, and the speaker thought that this line might profitably be extended throughout the country. Mr. L. SHOETEN SACK, general secretary of the Community Council of Kent, gave an account of the voluntary care work which had been carried on in that county. Voluntary liaison officers had been appointed to link up the tuberculosis officer with the reserve of voluntary effort in various districts. A yearly report of all cases dealt with was sent by each liaison officer to the central committee. Funds were raised locally so far as possible, but the central committee controlled a case fund raised from voluntary sources, and made grants in aid of special cases. Continuity of care was particularly necessary as regards housing and education.

THE ANNUAL MEETING

After the formal business Dr. F. C. S. BRADBURY discussed briefly the present position as regards the report on the Tyneside inquiry, which he hoped would be completed during the present year, and gave a statistical basis for opinions about the causes of tuberculosis. Special care was being paid to the interpretation of the statistics which had been collected. Dr. HARLEY WILLIAMS emphasized the value of propaganda work in enabling the public to think more accurately and helpfully as regards the campaign against tuberculosis. Education of social authorities might assist in dissipating the too prevalent complacency. Instruction given should be positive rather than negative, and propaganda be penetrating though unobtrusive. More should be generally known about the facilities offered by the National Association. Dr. A. H. MACPHERSON reported that the scheme and routine of the Burrow Hill Sanatorium Colony for lads had now been stabilized. Cases were still being sent in too advanced for restoration to be possible to full working capacity. An appeal was made for more patients, since there were many vacancies.

"MUSHROOM" POISONING

We are indebted to Dr. F. R. Seymour of the Ministry of Health for the following translation of an article by MM. Henri Limousin and Germain Petit (of Claremont-Ferrand) which appeared in the "Bulletin de l'Académie de Médecine" on May 24th this year. Dr. Seymour recalls that the "Amanita phalloides" is the most fatal fungus known, and is one of the most likely to cause poisoning in this country—several deaths were reported last year—where the unskilled may mistake it in its early stages for young field mushrooms. The information given below might, if generally disseminated, be the means of saving some lives.

THERAPEUTIC EXPERIMENTS ON THE MANNER OF INTOXICATION BY "AMANITA PHALLOIDES"

One of us[1] has shown that it is possible to transmit to the cat, an animal naturally susceptible to amanita poisoning, the immunity possessed by certain rodents, especially the rabbit. In short, if one causes the cat to absorb cooked *Amanita phalloides* by the digestive tract, the animal dies of acute intoxication in about forty-eight hours, showing a clinical picture of gastro-enteritis with acute massive degeneration of the whole of the liver cells, as well as with an acute glomerulo-epithelial nephritis. The dose necessary to produce this acute intoxication in the cat is of the order of 5 to 10 grams.

On the other hand, if one gives the same amount of this mushroom to a rabbit, no toxic phenomena ensue. But it is not a question of total organic immunity of the rabbit, since the subcutaneous injection of a fairly small dose (0.5 c.cm.) of the juice of the mushroom heated to 120° is fatal, and the lesions that can be observed are comparable to those produced in the cat by ingestion and alimentary absorption. It seemed to us, therefore, that some specific neutralization must occur in the rabbit's digestive tract. In a later series of experiments we found that if we cause a cat to ingest a certainly fatal dose (10 grams) of the mushroom heated to 120°, mixed with fresh rabbit stomach (100 grams), the cat dies at the end of six days, showing slowly developing symptoms of nerve intoxication, but not showing any liver lesions post mortem.

We concluded that in this case the toxin which caused acute gastro-enteritis and liver necrosis had been neutralized by the stomach of the rabbit, but that there existed another toxin (a neurotoxin), which was absorbed through the rabbit's digestive tract without being neutralized and against which the nervous organism of the rabbit is naturally immune.

We then tried to neutralize this neurotoxin by means of nerve tissue from the rabbit. If one feeds to a cat a mixture of 10 grams *A. phalloides* heated to 120°, 100 grams of fresh rabbit stomach, and 60 grams of fresh rabbit brain substance, neither gastro-intestinal nor neurotoxic symptoms are observed—the cat survives. We consider, therefore, that in this mixture the rabbit stomach neutralized the liver toxin and the brain substance the neurotoxin, so that all intoxication was prevented. Unfortunately, it has not been possible up to the present to treat by means of stomach-brain mixture an animal already intoxicated, when it begins to show early signs of gastro-enteritis, because the cat will not only refuse to eat anything at all, but also shows complete gastric intolerance with continual vomiting.

TREATMENT IN HUMAN BEINGS

Two series of phalloidian intoxications in the human subject have, however, given us a fortunate opportunity of showing that it is possible to neutralize the mushroom toxins by a mixture of rabbit stomach-brain, even a considerable time after the absorption of the poison.

[1] Limousin, Henri: 64ième Congrès des Sociétés Savantes, Clermont-Ferrand, 1931.

First Series

Family G. (Serbian subjects.) F.56 ; M.66 ; D.26 ; S.24.

On Sunday, September 6th, 1931, the family partook of a dish of mushrooms cooked in the afternoon by the father. On being shown samples of *Amanita phalloides* he recognized them as being the same as those he had cooked and he and his family had eaten. A normal night followed, but next morning (Monday) all four showed some early symptoms—headache and slight nausea. Father and son went to work as usual, but at three in the afternoon all four members of the family were attacked with diarrhoea and vomiting. The local practitioner, on being called in, diagnosed fungus poisoning, and sent all four patients to the Clermont-Ferrand Hospital, where they arrived on Tuesday, September 8th. The symptoms were identical in all cases—complete lucidity, incessant vomiting and colicky diarrhoea, liver painful to touch, slight swelling and slight jaundice, cyanosis, chilled extremities, dark circles round the eyes, rapid pulse. The girl of 26, who showed the most serious symptoms, died the next day, in spite of injection of antiphalloidal serum.

In view of the seriousness of the cases and the death of one of the patients we decided to try to neutralize such toxins as might still remain free in the digestive tube by giving fresh rabbit stomach-brain mixture. The three survivors each consumed during that Wednesday three fresh rabbit stomachs mashed and seven fresh brains. About an hour after taking this mixture we noticed that there was cessation of colic in all three and an amelioration of the signs of gastro-enteritis. No vomiting took place, and they were able to retain the mixture. In view of the general improvement seen next day, we thought it desirable to give the invalids some raw liver in hopes of supplementing to some extent the hepatic insufficiency which was likely to take place shortly, so far as we could judge from observations made on experimentally intoxicated animals. We therefore gave about 150 grams of minced veal liver. The result was unexpected—colic and diarrhoea recommenced. We were obliged to give a fresh dose of stomach-brain mixture to settle it. Animal experiment confirmed this curious inhibiting action produced by liver on the rabbit stomach-brain mixture. A cat previously dosed with a mixture of 10 grams amanita, 100 grams mixture of stomach and liver (containing 30 grams of the latter), and 60 grams brain substance, died in two days with the same symptoms of intoxication and the same histological lesions as the controls that had had a similar dose of mushroom only. On the other hand, the invalids tolerated and even seemed to improve on receiving daily subcutaneous injections of a polyvalent extract of liver, kidney, suprarenal, and spleen, free from albumin and lipoids. At the end of a week they were able to leave the hospital cured, and had no further complications. The post-mortem on the girl who died three days after eating the mushrooms showed liver cell degeneration in every respect comparable to what we had seen in the cat in similar circumstances.

Second Series

A Spaniard aged 40, with two friends aged 37 and 44, consumed some unrecognized mushrooms on October 18th, 1931, in the evening. Nothing abnormal occurred during the night, but next day there was vomiting, colic, and very frequent diarrhoea. The man alleged that he had only gathered *Amanita muscaria* (fly catcher) and *Agaricus campestris* (field mushrooms). We thought, therefore, that we had to do with a case of muscarine intoxication, although there was no delirium ; on the contrary, signs of gastro-enteritis with some jaundice and tenderness of the liver were present, suggesting the phalloidian syndrome. We gave the three invalids fresh brain without result. Signs, however, of gastro-enteric symptoms and violent colic persisting, we gave the usual mixture of raw rabbit brain and stomach, with the same favourable result as in the previous cases: the symptoms of gastro-enteritis and colic rapidly subsided. In a few days the three invalids were able to leave hospital definitely cured. This was apparently a case of poisoning by the *verna* variety of *A. phalloides* which, at all events in our district, grows in the autumn and which may be confounded with the *Agaricus campestris*, among which it may grow. It

may be remarked that the patients in both series were foreigners, strangers to the country, and not knowing the poisonous varieties of mushrooms.

In view of the therapeutic results observed we feel justified in concluding that neutralization of the toxin by the compound rabbit stomach plus rabbit brain substance took place in these human subjects in a manner altogether comparable with the results with experimental animals. The fact that the remedy was only applied very late, three days after the poisonous meal, did not prevent the treatment having a favourable result.

LONDON RADIUM INSTITUTE

REPORT OF PROGRESS

This year the Radium Institute attains its majority, and very appropriately celebrates the event by initiating what is practically a new series of reports. As the last report was published in 1927 there is a great deal to be recorded in the way of progress, and this is done in a very clear and succinct manner. The Institute possesses 3.6 grams of radium element, and a further gram has been loaned to it by the Radium Commission: this gram, together with 1.3 grams belonging to the Institute, is employed in the form of radium chloride for the supply of radon, of which 62,032 millicuries were prepared during the year 1931. The supply of radon is available for use, not only at the Institute, but also for hospitals and private practitioners.

FOLLOW-UP SCHEME AND POST-GRADUATE INSTRUCTION

One of the most important innovations during the past year has been the appointment of a resident registrar with special charge of the "follow-up" department, and upon its efficient working depends the recording of the progress of patients after their discharge from hospital, whereby the value of different forms of therapeutic technique can be estimated. Patients are instructed to report for re-examination at definite intervals after treatment, and careful records are kept of the conditions observed. When it is impossible for the patient to attend hospital for this purpose his doctor is written to every three months; when the report is satisfactory an entry to this effect is made. The notes are taken on forms designed by the National Radium Commission so as not only to secure uniformity of record, but to ensure that entries are made on all those points which experience has shown to be of value. Since standardization of records and the establishment of a "follow-up" department are now the rule at all radium treatment centres, a large amount of valuable information will be accumulated and subjected to accurate statistical analysis. As similar measures have been adopted by workers on the Continent, in America, and in the British Dominions generally, it is clear that a great advance has been made in throwing all information upon the subject into a common stock. Another important feature of the activities of the Radium Institute has been the establishment of a post-graduate school of radiotherapy, the classes in connexion with which are held both in London and at the Mount Vernon Hospital at Northwood, under the general direction of Sir Cuthbert Wallace.

RESEARCH WORK AND NEW PLANT

The pathological research department remains under the control of Dr. Mottram, whose laboratory accommodation has been transferred to Northwood, but who still retains the directorship of the pathological research work in London. An idea of the extensive work carried out in this department may be gained from the fact that between 1930 and 1932 fourteen scientific papers have been communicated by the director and his co-workers, and these include such varied subjects as immunity, the action of radiations upon the blood, the susceptibility of tumour cells to radiation, the interpretation of blood counts in radium and x-ray workers, secondary radiations from bone, as well as other papers on what may be regarded as more strictly technical subjects, of interest mainly to the specialist in such matters. An ultra-violet ray apparatus, new sterilizing plant in the operating theatre, a new out-patient department, and increased in-patient accommodation are among the more recent alterations in the institution. It is hoped shortly to provide a high-voltage x-ray apparatus, which will undoubtedly be of great value in clinical research as well as in treatment. The questions of the choice of radium or x rays, and the supplementing of radium by x-ray treatment are among the outstanding problems of radiation therapy. The combination of radiations of varying wave-lengths in treatment is as yet only in its experimental stage, but so far as clinical observations go it seems to hold out great hopes for the future.

RADIOTHERAPEUTIC TECHNIQUE

A review of the methods of treatment adopted occupies more than thirty pages of the report, and detailed descriptions of radium therapy in different regions will give the practitioner who contemplates sending a patient for treatment a very good idea of the operative procedures necessary for the application of radium, as well as of the probable duration of treatment. In general, the method of dosage by small individual units of radium is that which finds most favour: these are spaced so as to give uniform and efficient radiation, and are allowed to act for a relatively long time—about a week is a not uncommon duration of application. In carcinoma of the tongue needles of 2, 3, and 4 cm. active length and of radium contents of 1.0, 1.5, and 2.0 mg. are used. The most efficient screenage has been found to be 0.5 mm. platinum. Formerly a wall thickness of 0.3 mm. was tried: this was discarded as a routine screenage on account of the severe reaction and pain which it occasioned. The smaller screenage (0.3 as compared with 0.5 mm.) allowed a greater proportion of the "hard" β and "soft" γ radiations to pass, so giving rise to inflammatory and even necrotic changes. On the other hand, screenage of 0.6 mm. has the disadvantage of increasing the bulk of the needle and thereby increasing the degree of trauma consequent upon its insertion, while, when a number of needles are inserted into such an organ as the tongue, increased weight adds to the inevitable discomfort of the patient. For the support of radium needles used for surface radiation Columbia paste is found most satisfactory for such regions as the neck, where there is considerable irregularity of contour and a fair degree of mobility. To render it as light as possible it is perforated after the style of such materials as perforated zinc. In other situations, as in post-operative superficial radiation of the breast area, "sorbo rubber" is very convenient. It can be obtained of various thicknesses, and has the advantage of being very light. The pharynx still appears to be a region where the treatment of neoplasms by any means whatsoever—including radiation—is very unsatisfactory. Rapid growth and early metastasis militate against success, and it is necessary in only too many cases to select that form of treatment which will render the patient's remaining short lease of life as bearable as possible. Malignant conditions of the lip, upper jaw and antrum, palate, uterus, breast, urinary bladder, rectum, and skin are all dealt with in sufficient detail to explain broadly the general technique used; while the treatment of certain non-malignant conditions completes this section of the report. A tabulated statistical summary of the various regions treated is a very useful addition to the more detailed descriptions of the different types of technique employed. There are several illustrations, including photographs of the recently installed radon plant. Altogether this is a valuable and informative report.

Scotland

Health of Edinburgh

The report for 1931 of Dr. John Guy, M.O.H. for the city of Edinburgh, reveals the increase in public health expenditure during recent years. In 1909–10 the amount expended was £34,459 ; in 1931–2 it was £346,025. The population of the city, as determined by the census in April, 1931, was 439,010, with an excess of 40,310 females over males. As the census in 1921 had shown a population of 420,264, there had been an increase in the ten years of 4.5 per cent. In some of the municipal wards in the centre of the city the population had decreased, while in suburban areas there was an increase in population due to the new and better housing accommodation. The birth rate for the year had been 16.2 per 1,000 of the population, the lowest recorded in the city, except for the two years 1917 and 1918, when the birth rates were 15.3 and 15.1 respectively. In 1871 the birth rate had been 34.8 per 1,000, but the infantile mortality in that year was 151 per 1,000 births as compared with the infantile mortality of 69 per 1,000 in 1931. The general death rate for the year had been 12.9 per 1,000 of the population, which was the lowest yet recorded for the city and was also the lowest among the four chief towns in Scotland. With regard to the treatment of pulmonary tuberculosis, an interesting experiment had been made in one of the Edinburgh sanatoriums, where the vegetarian diet associated with the name of Dr. Gerson was tried for a period of six months on selected patients. The diet, however, did not seem to have produced any specific effect. With the steps now being taken in Edinburgh to prevent the spread of tuberculosis by milk, it was hoped that tuberculosis of bovine origin would, at an early date, become non-existent. The city had been comparatively free from infectious disease during the year, and no case of typhus fever had been reported since 1907. An arrangement had been effected by which members of the staff of the school medical department were transferred for part of their time to the Child Welfare Service ; this arrangement had proved highly satisfactory. Reconditioning had been carried out in several of the municipal and Poor Law hospitals at a cost of under £40 per bed. A noteworthy feature had been the opening of a mental clinic.

Edinburgh University Medical Graduation

On July 20th, in the M'Ewan Hall of Edinburgh University, Principal Sir Thomas Holland conferred the degree of Bachelor of Medicine and Bachelor of Surgery on 119 graduands, and that of Doctor of Medicine on fourteen graduates. In his address, after the capping ceremony, Professor John Fraser said that the city and its school had bequeathed to them a legacy of memories, and they were entering medicine to-day at a most interesting phase of its progress. Medicine in the past had been in large measure free from the influence of social and economic change ; in fact, pride had been taken in detachment from matters outside the immediate interest of professional practice. Men had always been found who could display altruism and judgement in the guardianship of medical interests, and in a similar way the great corporations of their profession had, like Horatio, held their bridges. The first real appreciation by the profession of its importance in matters of communal well-being had been evidenced by the National Health Insurance Act of 1912. To-day a further change was taking place, and the Utopian age of free hospital treatment appeared to be passing away. Professor Fraser advised his audience to cultivate the faculty of thinking ; the lives of many doctors to-day were incomplete and hampered because they were losing the faculty of raising themselves to the higher levels of abstract thought, and the result was that they were unable to extricate themselves from humdrum materialism. He advised them to develop the faculty of independent thought by reading, not merely within the limits of their profession, but as widely as they felt inclined. Much of a doctor's time was spent in contact with the sad, the depressing, and sometimes the tragic aspects of life, and to keep his faculties at the best he must provide himself with opportunities which would afford the saving element of contrast and so weave a golden thread through the sombre fabric of the daily round.

Ireland

Population of the Irish Free State

The quarterly returns of the marriages, births, and deaths for the Free State issued this month show that the marriage rate (4.3 per 1,000 of the estimated population) for the first quarter of 1932 is 1 per 1,000 below the average for the corresponding quarters of the previous ten years. The birth rate of 18.3 per 1,000 is 1.7 per 1,000 below the average for the first quarters of the previous ten years ; for Dublin City the rate was 24.2 ; for Dun Laoghaire, 16.5 ; Cork, 21.3 ; Limerick, 24.2 ; and Waterford, 27.3. The corresponding birth rate for Northern Ireland was 20.6 ; England and Wales, 15.3 ; and Scotland, 19.0. The death rate per 1,000 was 17.7, or 0.1 above the average ; for Dublin City it was 19.6 ; Dun Laoghaire, 14.8 ; Cork, 20.2 ; Limerick, 21.8 ; and Waterford 27.3. The rate in Northern Ireland was 17.1 ; England and Wales, 15.4 ; and Scotland, 16.2. The town with the lowest death rate in the Free State was Tralee, with a rate of 13.7 per 1,000, and the next lowest was Dun Laoghaire, with 14.8 ; Waterford had the highest death rate of 27.3 per 1,000. The estimated population of the Free State to the middle of this year was 2,937,000 (males 1,514,000, and females 1,459,000), an increase of 16,000 on the estimate for last year.

County Dublin Board of Health

The report of Dr. G. A. Harbison, County Dublin medical officer of health, states that during the month of June the incidence of infectious disease has been comparatively low. In several parts of the county huts and sheds have been erected without permission from anyone, save the owner of the land, and in view of the situation at Portmarnock, the adoption of by-laws regulating tents, vans, and sheds is recommended. Dealing with the school medical service at Skerries, where 110 boys and 114 girls have been examined, Dr. Harbison's report shows that he found defective teeth in 43 boys and 34 girls ; diseased tonsils and adenoids in 11 boys and 22 girls ; defective vision in 9 boys and 8 girls ; malnutrition in 18 boys and 35 girls ; uncleanliness in 34 boys and 74 girls ; anaemia in 3 boys and 9 girls ; heart disease in 1 boy and 2 girls ; bronchitis in 3 boys and 1 girl ; suspected pulmonary tuberculosis in 2 girls ; defective clothing and footgear in 26 boys and 14 girls. Twenty-seven children were found to be unvaccinated. It was decided to authorize Dr. Harbison to take steps to encourage the attendance of children's parents at school medical examinations.

In the *Analyst* for July there is a full report of the communications to the Society of Public Analysts by Dr. L. H. Lampitt, Mr. N. D. Sylvester, and Dr. J. H. Burn on the determination of aluminium in foods and its physiological action. An abstract of these papers was published in the *Journal* of June 11th (p. 1080).

Correspondence

TREATMENT OF TRIGEMINAL NEURALGIA

SIR,—Dr. Wilfred Harris in his article on trigeminal neuralgia of July 16th refers to my address before the Section of Surgery of the British Medical Association in July, 1931. Dr. Harris's very able exposition of alcohol injection of the Gasserian ganglion as opposed to section of the sensory root at open operation leaves me unmoved and unrepentant. I believe now, as I believed then, that fractional division of the sensory root is the best of all possible methods of treatment, and I do not believe that alcohol placement, which must always be blind, can compete with it as a scientific procedure. Since last July I have operated upon another thirty cases, making 115 in all, with the same two deaths which I mentioned then. During the past year, and especially during the past few months, I have adopted local anaesthesia as a first choice, employing the same basal anaesthesia that Dr. Harris and I both use for our ganglion injections, morphine or omnopon, and scopolamine. The average patient remains hospitalized for precisely eight days, having been up since the third post-operative day. As to ability to return to work, there is not so much to choose between the two methods as appears on the surface ; it is not an operation under local anaesthesia that upsets the patient, but the new state of the sensation of the face, and this will be equal in either case, with the advantage on the side of the patient with a fractional division. It is for this reason that I believe that preliminary peripheral injections have their place, and this remains of the first importance whatever method one is ultimately going to adopt to produce a lasting anaesthesia. The period of relief obtained and its quality allow one to select with more discernment those cases which should be operated upon.

Dr. Harris does me an injustice if he believes that I hold that operation is the only method of treatment and the one that should immediately be put into practice on all patients. There are surgeons who think so, but I was never one of them. I hold that man a bad doctor who has but one method of treatment for an affection as variable as trigeminal neuralgia.—I am, etc.,

Manchester, July 20th. GEOFFREY JEFFERSON.

VOLKMANN'S CONTRACTURE

SIR,—In the review of Mr. Walter Mercer's textbook on orthopaedic surgery that appears in the *Journal* of July 16th exception is taken to his statement that

"by the exercise of proper care in the early stages of elbow injuries, this condition [Volkmann's contracture] should not arise."

Your reviewer goes on to say that

"as it has been proved that the condition may arise without any want of proper care, we think it a pity that such an authoritative statement should be published, which might be quoted in support of vexatious legal proceedings."

Nevertheless, if we accept the excellent work on Volkmann's ischaemic contracture by Brooks, Jepson, and Middleton, so well summarized in the opening paragraphs of Chapter XVI of this book, there is every reason for Mr. Mercer's statement being upheld. There is little doubt that the cause of the contracture is obstruction to the venous return from the muscle without arterial compression—that is, an arterial engorgement of the muscle. This being so, the treatment is simple: it is to relieve the veins of the ante-cubital fossa of all abnormal pressure. In most cases abolition of splints or plaster, extension of the elbow, and gentle reposition of the fragments of the fractured humerus will suffice. But there may be a large subfascial haematoma which in itself is sufficient to compress the ante-cubital veins, even after all ordinary precautions have been taken. A case of ischaemic contracture has been described in a haemophiliac, where there was no fracture, but merely a haematoma anterior to the elbow-joint.[1] It follows that, if all the usual measures fail, there is urgent need for decompression of the vessels by incision of the deep fascia and evacuation of the haematoma. This was practised as long ago as 1914 by Murphy, suggested more recently in the second edition of the textbook by Jones and Lovett, and again by Mr. Mercer.

Surely if this measure were included under "proper care" ischaemic contracture could not arise in a case under careful observation. Such a case treated by open operation is described in minute detail by H. P. Nelson (*Lancet*, 1930, ii, 795). Here was a child with a supracondylar fracture, an impending contracture, fulminating in its onset, treated by open incision, and exhibiting a recovery little short of miraculous. I would commend this excellent article to all who deal with fractures. I have no personal experience of this operation, but it must be given an extensive trial before "it has been *proved* that the condition may arise without any want of proper care." [The italics are mine.]—I am, etc.,

Country Branch, Royal National Orthopaedic Hospital, July 21st. H. J. SEDDON.

THE "NORMAL" TEMPERATURE

SIR,—In your issue of July 23rd (p. 174) Dr. J. S. Manson refers to a case in which the oral temperature was 2.4° higher than that of the axilla, instead of the usually accepted excess of 0.5°. No mention was made of cases in which the axillary temperature exceeds the oral.

In the following seven instances the axilla appears to have been superheated.

1. An adult male with acute lobar pneumonia showed an axillary temperature of 106.6° and an oral of 103.5°.
2. A female, one week after labour, showed 102° and 98.4° respectively.
3. A female with influenza: 105.5° and 101.5° on one day, and 102° and 99° on the next.
4. A male, aged 18, with haemoptysis: 101.6° and 99°.
5. A female, aged 70, with influenza: 108.5° and 100.6°.
6. A female with metrorrhagia: 101.2° and 98.2°.
7. A female, aged 27, with a common cold: 101° and 98°.

In all these cases the axillary temperature exceeded the oral by more than 2.5°, and in one case the excess was 7.9°. From the experience gained from the above cases, and also from those in which the axillary has been considerably below the oral temperature, I place no reliance upon the temperature of the axilla, and, in fact, entirely disregard it.—I am, etc.,

Herne Bay, July 24th. T. ARMSTRONG BOWES.

INJECTION TREATMENT OF INGUINAL HERNIA

SIR,—Mr. Sawday (July 16th, p. 122) asks how it is possible to be sure of not entering the sac and injecting "obturatin" therein when it is empty. If the sac is completely empty its walls are in apposition, and it is extremely unlikely that the point of the needle would enter it. It is the presence of a little fluid, never more than a cubic centimetre or two, which permits of this accident. However, on a few occasions, after the injection of a few drops, the patient has complained of pain in the hypogastrium radiating to the umbilicus and flank. I have then, on the assumption that the fluid may be reaching the peritoneal cavity, withdrawn the needle slightly before continuing the injection.

[1] Lord, J. B.: *Journ. Amer. Med. Assoc.*, 1926.

Up to the present over twenty thousand cases have been treated by the injection method, and not a single case of sarcoma following the treatment has been reported. The risk may therefore be denied.—I am, etc.,

ST. GEORGE B. DELISLE GRAY, F.R.C.S.Ed.

Hove, July 19th.

THE ORIGIN OF TUMOURS

SIR,—In his letter published in your last issue Dr. Gye says that "fowl tumours may be dried and retain their activity for years." If this is true, why is it more difficult to believe that the active agent which is thus capable of retaining its vitality is some portion of a cell, rather than a virus, which is also a living substance?—I am, etc.,

London, W.2, July 25th. J. P. LOCKHART-MUMMERY.

ALUMINIUM AND HEALTH

SIR,—The question of food allergy which has been introduced into the discussion on the dangers of preparing food in aluminium utensils tends to obscure the issue. I have had the opportunity of observing several cases of "infantile eczema," hitherto diagnosed as being of allergic nature, and a large number of patients suffering from acute and chronic urticaria accompanied by severe gastro-intestinal disturbances. In the acute cases the signs and symptoms were of such unusual severity as immediately to suggest their being due to a highly potential irritant which in its action was closely similar to arsenic and belonged probably to the same group of poisons, although arsenic itself was not found. It was subsequently proved that the aetiological factor in these cases was in fact a highly potential irritant present in aluminium utensils, since all the signs and symptoms disappeared within a short time after the discarding of these utensils and of other sources of metallic poisoning.

The suggestion (so far as I know, the first ever put forward) of a close similarity in the actions of aluminium and arsenic is borne out by Underhill and Peterman, who, in a series of articles on "Studies in the metabolism of aluminium" (*Amer. Journ. Physiol.*, 1929, xc, 15), state:

"The blood or indeed any of the tissues may become, as it were, saturated with a given metallic ion for the time being and be then unable to carry any further added increment. Such a condition has been suggested for arsenic, and there is no apparent reason why this explanation would not hold for aluminium."

Later in the same article they write:

"We are unwilling to state that aluminium is a physiological metal in the sense that calcium or magnesium is. Since the amount [that is, of aluminium found in the blood of all but two of the animals tested] varies considerably we are inclined toward the viewpoint that it should be classed rather with copper and arsenic."

Moreover, in support of my statement (*Franco-Brit. Med. Rev.*, 1928) that skin affections are very often produced by metallic poisoning, and by aluminium in the first instance, Underhill and Peterman write in the same article that on feeding dogs for twelve weeks with aluminium a skin disease developed in one of the animals, which was covered with abscesses that became large bleeding sores.

"It became so sick that it would not attempt to eat or even move. It was given milk, a quart at a time, by stomach tube for a few days. Improvement started at once; by the end of the experiment it was eating all its food, the skin had healed, and new hair was growing."

Such are the statements of two scientific investigators among many whose conclusions point to the necessity, definitely urged by Schaeffer and collaborators (*Bull. d'Hygiène Publique*, 1928, xvi, 49), of prohibiting the use of aluminium. It would be interesting to know how Dr. Burn, after quoting from these very same physiologists, Underhill and Peterman, can uphold his statement that the dangers arising from aluminium utensils are non-existent.

It cannot be sufficiently emphasized that the symptom-complex described is not due to food allergy, as suggested by Dr. Loewy, but to a poison to which man and animal alike show a varying degree of sensitiveness. This opinion agrees entirely with that of several investigators in America, France, and Switzerland, and is confirmed by the clinical observations of several medical men in this country. Such conclusions are not consistent with the explanation given by Dr. Burn and Dr. Stolkind, who attribute the disappearance of the symptom-complex to psychological effects.—I am, etc.,

LEO SPIRA, M.D.

London, N.W.6, July 11th.

WHAT IS A PHILOSOPHY?

SIR,—An expression which is used in the review of my book *Desire and Creation* in your issue of July 16th arouses my curiosity. In commenting upon certain conclusions which are drawn there the reviewer says "as a philosophy this may serve." He finds the propositions unproved, but they may pass "as a philosophy"! Is not this rather hard on the philosophers? If I read aright those who are writing to-day, they conceive their task to be that of unifying the various so-called "branches of science" and so arriving at the widest possible generalizations. It would be interesting to me to know what your reviewer understands by the word philosophy; clearly something very different from this, something nearer to private sentiment unsupported by evidence.—I am, etc.,

Liverpool, July 18th. K. W. MONSARRAT.

*** Mr. Monsarrat has perhaps overlooked the significance of the indefinite article in the expression "a philosophy." See *New English Dictionary*: "Philosophy," definitions 8 and 9.

EDUCATION FOR GENERAL PRACTICE

SIR,—Having read with much interest the various letters on a "Student in Irons," may I be allowed to use your columns to make a suggestion? I have been twenty-four years in purely general practice—twelve in England and twelve in Rhodesia. My own experience, and that gained from working with recently qualified men, has always impressed me with the fact that when we have completed our medical education in the schools we are ill fitted to assume the responsibilities of a general practitioner. By reading the various medical journals and books we should be well informed as to what the specialists in the various branches can effect for the benefit of our patients; but we have neither time nor need to master all their niceties of technique. I would suggest that, as the majority of us are destined to be general practitioners, general practitioners of good standing should be well represented on our teaching bodies, and the advantage of their experience be applied to the curriculum. The fault I have found with recently qualified men who have been assistants to me from time to time has been a tendency to rely on specialists to diagnose their cases for them; and as they are inclined not to carry out a careful examination they are uncertain what sort of specialist is likely to be of use to them. Also their ideas of treatment of a simple straightforward illness are lamentably wanting. To give a concrete example of practical application: an old tropical practitioner by the history and a careful examination is satisfied that he is dealing with a case of malaria. Quinine is given, and the improvement of the patient clinches

the diagnosis. Whereas a recent recruit armed with the diploma of tropical medicine is apt to withhold treatment until he establishes a diagnosis by finding the plasmodium in blood slides, which takes a competent man half an hour to do (Manson-Bahr).—I am, etc.,

S. Rhodesia, May 20th. ERNEST P. CARMODY.

COX TESTIMONIAL FUND

SIR,—There are, no doubt, many hundreds of doctors—members and non-members of the British Medical Association—who desire to be associated with the recognition that has been given to Dr. Alfred Cox, Medical Secretary of the British Medical Association, on his approaching retirement after twenty-five years' service devoted to consolidating the profession, defending the interests of medicine, and assisting in the development of medical services on sound lines. But they have put off doing anything ; one's daily post goes to prove this. There is yet time. The Presentation Book to Dr. Cox will not be finally completed and bound for the next week or so. Might I, therefore, urge immediate action? Any subscription, however small—but not exceeding 10s.—will secure inclusion of the names and addresses (only), and should be sent with these particulars to the Honorary Treasurer of the Cox Fund, British Medical Association House, Tavistock Square, W.C.1. Thus the desire will have been achieved.—I am, etc.

E. ROWLAND FOTHERGILL,
Honorary Secretary, General and Executive Committees.

Hove, July 23rd.

Obituary

GEORGE HERBERT RAE GIBSON, D.S.O.

M.D. F.R.C.P.ED.

The death occurred suddenly in Edinburgh on July 19th of Dr. George Gibson, Deputy Commissioner of the Board of Control for Scotland. Dr. Gibson, who had suffered from a heart affection for some time, became ill while travelling to his work, and died shortly afterwards. Born in 1881, Dr. Gibson was the only son of the late Dr. George A. Gibson, well known as a physician to the Royal Infirmary of Edinburgh and a heart specialist of the past generation. He was educated at the Edinburgh Academy, and entered upon the study of medicine at Edinburgh University. He became an ardent volunteer, and in this capacity served in the South African war, where he gained the Queen's medal with two clasps. Returning to Edinburgh, he graduated M.B. in 1906, and became a member of the Royal College of Physicians in 1908. For a period he was resident physician to the late Sir Byrom Bramwell, and subsequently assistant physician under the late Professor G. M. Robertson in the Royal Asylum at Edinburgh. After graduating M.D. in 1910 and taking the Fellowship of the Royal College of Physicians of Edinburgh in 1911, he decided to practise medicine at Vancouver, British Columbia. On the outbreak of the war he joined the Canadian Army Medical Corps, attached as medical officer to the 7th Canadian Infantry. Not long afterwards he became A.D.C. to the General Commanding the First Canadian Division, and later was in command of the 3rd Canadian Field Ambulance. In 1916 he was appointed D.A.D.M.S. to the Canadian Corps, and for his eminent military services he received the D.S.O. and the Croix de Guerre in 1916, and towards the end of the war, with the rank of lieutenant-colonel, he was Officer Commanding the Canadian Convalescent Officers' Hospital.

Returning to Edinburgh after the war, Dr. Gibson became Commissioner of Medical Services to the Ministry of Pensions in Scotland, and later was appointed a Deputy Commissioner of the General Board of Control for Scotland. Dr. Gibson's interest in mental disorders dated from graduation, and his publications included "Bacteriological Examination of the Cerebro-spinal Fluid in Dementia Praecox," *Archives of Neurology*, 1909 ; "Pathology of Dementia Praecox in Relation to the Circulatory Changes," ibid., 1911 ; and, when he was attached to the Board of Control, "The Boarding-out System in Scotland," contributed to the *Journal of Mental Science*, 1925. During the war Dr. Gibson found time to write *Maple Leaves in Flanders Fields*, published in 1916, one of the earliest and most attractive of the large number of war books. He wrote under the *nom de plume* of Herbert Rae. In 1925 Dr. Gibson became secretary of the Royal College of Physicians of Edinburgh. As secretary of the Medico-Chirurgical Club, one of the ancient dining institutions of Edinburgh, he produced many humorous sketches in prose and verse, and his contributions, both here and at other medical festivities, were greatly appreciated. He took a prominent part in organizing the Annual Meeting of the British Medical Association at Edinburgh in 1927, and was a valued occasional contributor to the *Journal*. For his powers of organization, his wide knowledge of medical affairs, and his general kindliness as a friend he will be widely missed by members of the Edinburgh medical profession.

After a memorial service, attended by representatives from the Board of Control for Scotland, the Royal College of Physicians of Edinburgh, and the Edinburgh Branch of the British Medical Association, at St. Andrew's Church, Drumsheugh Gardens, the funeral took place at the Edinburgh crematorium on Thursday, July 21st. Dr. Gibson is survived by a widow and a son and daughter.

FRANCIS GEORGE PENROSE, M.D., F.R.C.P.

Formerly Physician to St. George's Hospital ; Consulting Physician, Hospital for Sick Children, Great Ormond Street

Dr. Francis George Penrose, who died on July 16th at Lynton, Devon, came of a distinguished family. His father, F. C. Penrose (1817–1903), F.R.S., was surveyor to the Fabrick of St. Paul's, an archaeologist, and rowed in the Cambridge boat in the years 1840, 1841, and 1842 ; while his mother, who was a descendant of the sister of Archbishop Cranmer, wrote for the young under the pseudonym of "Mrs. Markham," and his aunt was the wife of Thomas Arnold of Rugby. His sister, Dame Emily Penrose, was successively Principal of Bedford College, London, Royal Holloway College, and Somerville College, Oxford.

Born in 1857, Penrose was educated at Repton, and University College and Hospital, whence, in 1884, he qualified M.B.Lond., proceeding to the M.D. in the following year. He became a member of the Royal College of Physicians of London in 1887, was elected a Fellow in 1895, and examined in materia medica and later in medicine. After holding resident appointments at University College Hospital he was elected medical registrar and pathologist (1886–7) at the Hospital for Sick Children, Great Ormond Street, where he was subsequently physician to out-patients (1891), physician (1897), and consulting physician (1905). In January, 1888, he was elected curator of the museum, the usual stepping-stone to the medical staff, at St. George's Hospital, and became assistant physician (1889) and physician (1897). He resigned, for family reasons, as long ago as 1905. Like other hospital physicians he took a keen interest in morbid anatomy, and in his early days was active at the old Pathological Society of London. As a clinician he was

most conscientious, being perhaps specially interested in nervous diseases, and was an enthusiastic teacher in the wards.

Tall, loose-jointed, with a reddish-yellow beard like a Norseman, he had a most kindly and good-natured disposition. Before his marriage in 1894, to Mary Helen, daughter of Laundy Walters of Wimbledon, he shared with a former student of University College Hospital, Charles Stonham—a man of otherwise different tastes—a house at the bottom of Harley Street and a life-long devotion to ornithology. He worked at zoology in his youth at Naples, where he had a severe attack of typhoid fever. He was an example of the physician-naturalist, and was in his retirement at Bournemouth, president of its Natural Science Society and Camera Club.

Dr. ARTHUR ELLISON, who was widely known in South Leeds, died recently at his home in Holbeck, at the age of 62. Educated at Scarborough, he received his medical training in the Leeds Medical School, and qualified M.R.C.S., L.R.C.P. in 1893. After acting as a ship surgeon he set up in private practice in Leeds. Joining the R.A.M.C. with a temporary commission in 1916, he saw service in France as a captain, and on his return was connected with the Leeds War Hospital. For many years he rendered valuable service to the St. John Ambulance Association, and was assistant commissioner for Yorkshire (No. 5 Division).

Closely following on the death of Dr. Bedford Pierce, another leading Quaker medical man has suddenly passed away. FRANCIS BURCHETT RUTTER, M.D., F.R.C.S., of Mere, Wilts, died after undergoing an operation at Bristol on July 17th at the age of 63. Before taking up a practice at Mere, Dr. Rutter was at Durham, where he took the M.D. degree, and at the London Hospital. He was also closely associated with the work of the Hospital for Diseases of the Throat, Golden Square, and with the London Temperance Hospital. A keen Liberal, he became a J.P. for Wilts, and was an active temperance and peace worker. Since his retirement two or three years ago, owing to eye trouble, he had devoted most of his time to speaking on Quaker and other platforms on these subjects. His death was entirely unexpected, and he was to have been one of the chief lecturers at a special summer school arranged by the Friends Temperance Union at West Hill, Birmingham, at the close of this month.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

At a congregation held on July 23rd the following medical degrees were conferred:

M.D.—J. W. H. Simpson, H. L. Wilson.
M.B., B.CHIR.—H. R. Thompson, A. W. Vaisey.
B.CHIR.—*K. A. Ratcliff, *A. N. McCrea, *W. H. Gabb, W. O. M. Ede, W. H. G. Jessop, J. W. Cope, T. C. Gipson, R. V. H. Mercer, J. B. Harman, M. L. Rosenheim, G. J. Meikle, J. M. Vaizey, H. M. Chappel, T. D. Day, K. V. Earle, P. W. Hutton, F. Radcliffe, B. Holden, R. A. Jones, G. Williams, S. H. B. Platts, P. McI. Smyth, A. S. Herington.

* By proxy.

The following candidates have been approved at the examination indicated:

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.—*(Part II)*: Margaret A. Bromhall, A. C. Devaraj, N. Fram, E. D. G. Gillies, C. H. Hilliard, R. F. Innes, C. B. Jennings, S. D. Kilner, W. K. Morrison, S. A. Nagga, A. B. Sullivan.

UNIVERSITY OF LONDON

A meeting of the Senate was held on July 20th, when the Vice-Chancellor (Rev. J. Scott Lidgett, D.D., M.A.), was in the chair. A cordial vote of thanks was accorded to Dr. Scott Lidgett for his great services to the University during his tenure of office as Vice-Chancellor.

Dr. E. W. Hurst, formerly pathologist to the Millbank Research Fund at the Lister Institute, has been appointed to a University Readership in Experimental Pathology at the Lister Institute of Preventive Medicine; and Dr. J. W. Cook, since 1929 research chemist in the Research Institute of the Cancer Hospital, to a University Readership in Pathological Chemistry at the Cancer Hospital (Free).

The D.Sc. in Anatomy has been conferred upon Mr. S. Zuckerman, an internal student, of University College; and the D.Sc. in Biochemistry upon Miss M. A. C. Fixsen, an internal student, of the Lister Institute of Preventive Medicine.

The Geoffrey E. Duveen Travelling Studentship in Oto-Rhino-Laryngology, of the value of £450, has been awarded for 1932 to Mr. G. H. Livingstone, M.B., B.S., F.R.C.S.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL

The following entrance scholarships and exhibitions have been awarded: *Goldsmid Entrance Scholarships:* W. C. Chapman, W. A. Pritchard. *Goldsmid Entrance Exhibition:* L. N. G. Lytton. *Filliter Entrance Scholarship in Pathology:* C. G. Roworth.

The following awards during the academic year 1931–2 are announced: *Liston Gold Medal, Alexander Bruce Gold Medal, and Filliter Exhibition in Pathology:* G. Qvist. *Fellowes Gold Medals:* G. Qvist and H. V. Williams. *Tuke Silver Medal:* Miss A. L. Winner. *Tuke Bronze Medal:* Miss E. G. Byrde. *Fellowes Silver Medals:* H. G. John, J. A. G. Hair, and A. G. Hounslow. *Atkinson Morley Scholarship:* S. L. Wright. *Magrath Scholarship:* Miss A. L. Winner. *Atchison Scholarship:* E. A. Devenish. *F. R. Roberts Prize in Obstetrics and Gynaecology:* R. H. Foster and J. L. Hamilton-Paterson.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN

The following awards of scholarships for 1932–3 are announced: *St. Dunstan's Exhibition:* Miss L. H. Walter. *Isabel Thorne Scholarship:* Miss E. W. Town. *Mabel Sharman Crawford Scholarship:* Miss J. M. Blatchford. *Sir Owen Roberts Memorial Scholarship* (awarded by Clothworkers' Company): Miss M. F. Lockett. *Lewis Memorial Scholarship:* Miss M. Lloyd. *Special Lewis Memorial Scholarship:* Miss E. M. Lloyd-Davies. *Alfred Langton Scholarship:* Miss M. G. Ernst. *A. M. Bird Clinical Scholarship:* Miss M. J. Moore. *Ellen Walker Bursary:* Miss M. J. Montrose. *Flora Murray Bursary,* Miss A. C. N. Swanston. *Special A. M. Bird Scholarships:* Miss M. M. Burton, Miss D. O. Henry, Miss D. J. Perkins, Miss M. L. Penwill, Miss I. E. Sandford, Miss E. L. Weatherhead. *Special A. M. Bird and Flora Murray Scholarship:* Miss H. M. Brown. *Dental Bursary:* Miss M. J. Blennerhassett. *A. M. Bird Post-Graduate Scholarship in Pathology:* Miss R. O. J. Clark, M.B., B.S. *Mabel Webb and A. M. Bird Research Scholarship,* Miss U. Shelley, M.B., B.S. *Special A. M. Bird Research Scholarship:* Miss Margaret Salmond, M.D.

LONDON HOSPITAL MEDICAL COLLEGE

The "Freedom" Scholarship in Pathology (value £100), open to students of the Universities of Oxford and Cambridge, has been awarded to J. R. G. Harris of Emmanual College, Cambridge.

The following candidates have been approved at the examination indicated:

M.S.—*Branch I (Surgery):* R. K. Bowes, R. C. Brock, Philippa P. Martin, R. T. Payne, J. W. G. Phillips.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

The following candidates have been approved at the examination indicated:

ACADEMIC DIPLOMA IN BACTERIOLOGY.—D. N. Chatterji, R. S. F. Hennessey, K. Kundu, M. M. Muers, E. J. Pullinger, Betty Richards, J. Sigurjonsson, H. W. Y. Taylor, P. S. Watts, R. C. Wright, M. Yacob, H. S. Yusef.

UNIVERSITY OF EDINBURGH

At the graduation ceremonial held in M'Ewan Hall on July 20th, the following degrees and diplomas were conferred:

M.D.—G. W. Ancrum, ‡R. G. Anderson, J. B. Baynash, *J. D. S. Cameron, G. A. Dunlop, ‡E. L. Farquharson, R. Mennie, ‡A. M. Moll, W. J. Mowat, †R. F. Ogilvie, G. J. Roberts, S. S. Rosebery, *W. R. Russell, J. M. Watt.

D.PH. (Faculty of Medicine).—Esther A. Michael (*in absentia*).

M.B., CH.B.—H. T. H. Arnott, J. T. Baldwin, D. Ballantine, ‖G. W. Bathgate, ‖J. A. Baty, A. R. Bazin, G. B. Bigelow, C. G. Binns, H. R. Blum, J. W. Brydon, Chio-To Chan, C. C. Clarke, H. H. Corrigall, D. S. Cownie, C. L. Crawford, A. P. Cronjé, J. R. Davidson, Hilda M. Denholm-Young, T. M. J. d'Offay, I. H. Egelman, Janet M. S. Elder, J. K. Elliott, R. Elsdon-Dew, H. A. Forrester, B. B. Freshwater, S. J. Frewin, A. J. Galbraith, G. G. Glennie, W. Gray, C. A. Green, Lydia M. Grey, R. B. Gullison, S. W. Hirschmann, J. C. Hislop, C. Hotson, W. D. Hyde, E. A. Jack, Jessie A. T. Johnston, J. M'K. Johnstone, H. M. Lamprecht, Joan Lassetter, A. Lawrie, G. A. Lawson, G. Leventhal, L. Levin, Olive H. Lewis, L. Littman, E. L. Lloyd, J. B. F. L. Luke, J. S. Lyle, Joan M. MacDonald, Jean M'Dowall, J. Macfarlane, W. V. Macfarlane, D. F. M'Gregor, G. Macpherson, C. Mandelbaum, Isobel M. S. Marshall, Mary G. Masterton, Jean Mather, I. H. Matheson, G. D. Matthew, A. Menzies, A. R. M. Moir, A. B. Monro, Augusta S. Monro, J. W. Morgenthal, H. Morrison, I. C. C. Morrison, Helen H. M. Muir, J. A. Nicholson, E. B. Nicol, S. E. Onwu, A. D. Osborn, S. S. Ovanessoff, H. D. Palmer, H. Park, ‖J. Patrick, F. W. Paul, R. C. M. Pearson, R. Porteous, R. W. G. Ransome-Wallis, ‖M. Rassin, F. H. Reeder, B. Resnick, S. Robertson, Sheilah L. Ross, G. A. Rubin, H. N. Runsdorf, G. L. Russell, T. E. Rutter, R. L. de C. H. Saunders, ‖H. Scarborough, R. T. Sharp, H. M. D. Shepherd, C. Sokolove, J. Spanbock, N. G. Steere, J. B. Stewart, Pauline W. M. C. Stirling, I. D. Sutherland, Hon-Sham Tai, R. H. Tait, Constance L. Taylor, A. Thomas, A. E. Turnbull, J. Urquhart, A. E. P. Vanier, H. A. Vickers, S. E. Watov, Hilda Watson, Winifrede M. Watson, W. D. Weiss, P. R. Wentzel, L. J. Wigston, J. I. Williams, W. H. F. Wilson, R. C. Wood, C. B. Woodman.

D.P.H.—J. A. Cuthbert, S. Harvey, J. P. M'Gibbon, A. Thomson.

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.—C. E. S. Bailey, G. L. Chaudhuri (*in absentia*).

DIPLOMA IN RADIOLOGY.—C. Bellamy, J. T. M. Fenton-Fyffe, Margaret Findlay (*in absentia*), R. A. K. Harper.

* Awarded gold medal for thesis. † Highly commended for thesis. ‡ Commended for thesis. ‖ With honours.

The following prizes were presented: *Cameron Prize in Practical Therapeutics:* Edward Mellanby, M.A., M.D.Cantab., Professor of Pharmacology, University of Sheffield, in recognition of his discoveries regarding the therapeutic actions of the fat-soluble vitamins. *Stark Scholarship in Clinical Medicine:* J. G. M. Hamilton. *Gunning Victoria Jubilee Prize in Chemistry:* H. W. Melville. *Gunning Victoria Jubilee Prize in Materia Medica:* R. Gaddie. *Gunning Victoria Jubilee Prize in Forensic Medicine:* Jean D. Robertson. *Gunning Victoria Jubilee Prize in Midwifery:* R. J. Kellar. *Lauder Brunton Prize in Pharmacology and Therapeutics:* I. A. G. L. Dick. *Ettles Scholarship and Leslie Gold Medal, and Mouat Scholarship in the Practice of Physic:* J. A. Baty. *Allan Fellowship in Clinical Medicine and Clinical Surgery, Annandale Gold Medal in Clinical Surgery, and Pattison Prize in Clinical Surgery,* J. Patrick. *Buchanan Scholarship in Midwifery and Gynaecology,* G. Macpherson. *James Scott Scholarship in Midwifery and Gynaecology, Scottish Association for Medical Education of Women Prize, and Dorothy Gilfillan Memorial Prize:* Mary G. Masterton. *Beaney Prize in Anatomy and Surgery:* H. Scarborough. *Conan Doyle Prize:* R. Elsdon-Dew. *Murdoch Brown Silver Medal in Clinical Medicine:* M. Rassin. *Royal Victoria Hospital Tuberculosis Trust Gold Medal:* R. Porteous. *Wightman Prize in Clinical Medicine:* I. Mackenzie. *Sir Robert Jones Prize in Orthopaedic Surgery,* J. Macfarlane. *Cunningham Memorial Medal and Prize in Anatomy:* M. R. Ewing. *Whiteside Bruce Bursary:* Nancy H. Turnbull.

An address was delivered to the new graduates by the Promotor, Professor John Fraser.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At a meeting of the College held on July 22nd, with Mr. John Wheeler Dowden, President, in the chair, Lord Moynihan of Leeds was elected an Honorary Fellow of the College.

The following seventeen successful candidates out of sixty-seven entered, having passed the requisite examinations, have been admitted Fellows:

G. H. Bradshaw, E. S. Bolton, H. C. Callagher, G. B. Campbell, J. C. Clark, T. A. Clarke, M. M. Datnow, W. J. Eastwood, K. M. Hairman, C. W. Harris, T. N. A. Jeffcoate, A. Logan, D. P. McIntyre, R. de Soldenhoff, R. T. Thin, A. K. Wilson, A. D. Williamson.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

The following have been admitted Licentiates in Medicine and Midwifery: K. O'M. Barrett, F. R. Duggan, P. L. Fullen, J. D. McClelland, Sheila E. MacDonald, F. E. McLaughlin, M. F. MacNamara, R. A. M. Montgomery, J. Murphy, P. D. O'Rourke, J. Tierney, G. A. R. Warren.

Medical News

The Royal College of Physicians of London will be closed for cleaning from Monday, August 1st, till Saturday, September 9th, both days inclusive.

During August the only special course arranged by the Fellowship of Medicine will be in urology, at All Saints' Hospital. Individual clinics at various London general and special hospitals may be attended by arrangement with the Fellowship; a list can be obtained on application. Dr. G. F. Stebbing, assisted by the hospital staff, will give a demonstration of cases of general interest at the Lambeth Hospital, Brook Street, S.E.11, on Friday, August 5th, at 2 p.m. Application for attendance should be made to the Fellowship of Medicine, 1, Wimpole Street, W., by August 3rd.

The Association of Special Libraries and Information Bureaux will hold its ninth annual conference at Somerville College, Oxford, on Friday, September 23rd, to Monday, September 26th. On Friday evening, after Sir Charles Sherrington's presidential address, Professor J. L. Myers will read a paper on the relation between science and the humanities. Saturday morning will be given up to sectional meetings, and in the afternoon reports will be presented and discussed; in the evening Professor M. Greenwood will lecture on the history and sources of official vital statistics. On Sunday morning there will be further sectional meetings. Particulars of the conference may be had from the General Secretary of the Association, 16, Russell Square, W.C.1.

A conference on medical problems of contraception was held last May in London under the presidency of Sir Thomas Horder, and accounts appeared in our issues of May 28th and June 4th. We are asked to announce that copies of the report can be had from the secretary of the National Birth Control Association, 26, Eccleston Street, S.W.1 (price 2d., or 3d. post free).

The publication of a new alphabetical and local list of old students of St. Thomas's Hospital, revised to May, 1932, prompts us once again to congratulate Robert Hopkins, the compiler, upon the completion of a useful though laborious task.

The Liverpool Society of Anaesthetists was formed in July, 1930. It consists of twenty-six ordinary and six honorary members. Dr. A. J. O'Leary is the president, Dr. W. Bennet Jones vice-president, and Dr. R. J. Minnitt honorary secretary.

Mr. Samuel A. Courtauld, chairman of the Middlesex Hospital Medical School, has given £10,000 to increase the endowment of the S. A. Courtauld Institute of Biochemistry. This brings the total of his benefactions to the Medical School to £100,000. Its purpose is to stabilize the income of the school and its research departments, so that any economies required at the present time shall interfere as little as possible with the progress of the scientific work carried out at the hospital.

Sir Frederick Gowland Hopkins of Cambridge and Dr. C. F. Geiser, professor of biochemistry at Zürich, have been elected honorary members of the Imperial Leopold German Academy at Halle; Professor Carl Neuberg of Berlin, director of the Kaiser Wilhelm Institute for Biochemistry, has been elected an honorary member of the Danish Biological Society; and Professor Leopold Leichtwitz of Berlin, director of the Rudolf Virchow Hospital, a corresponding member of the New York Academy of Medicine.

Visits to the Tower of London, in aid of the King's Fund, will be paid on the afternoon of August 13th and 27th. Mr. Walter Bell will give addresses on the Tower and conduct parties round the building. Tickets (price 7s. 6d.) can be obtained from the secretary, King Edward's Hospital Fund for London, 7, Walbrook, E.C.4.

Mr. H. B. Stokes has been appointed secretary-superintendent of Queen Charlotte's Maternity Hospital, in succession to Mr. Arthur Watts, who is retiring after thirty-eight years' service.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBERS** of the British Medical Association and the *British Medical Journal* are *MUSEUM* 9861, 9862, 9863, and 9864 (internal exchange, four lines).

The **TELEGRAPHIC ADDRESSES** are:
EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*
FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*
MEDICAL SECRETARY, *Medisecra Westcent, London.*

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Injection for Hydrocele

"H. C." wishes to know of an effective yet safe substance for the injection of hydrocele. Also, is there any record of sodium morrhuate having been used?

Public Baths at Coastal Resorts

Dr. BISHOP (M.O.H. Guernsey) would be glad of particulars of public baths, sea and fresh water, in any coastal health resort of approximately 30,000 to 50,000 inhabitants, preferably on the south or west coast of England.

Gnat Bites

Dr. M. E. ORMESBY (London, W.) writes in answer to the query by "J. A. S." about preventive measures and gnat bites: I suggest the following methods. (1) Powdering arms, hands, and legs (stockings proving no barrier to gnats), face, and neck with boric powder (a possible idiosyncrasy to boric powder should be remembered—boric acid rash); or (2) powdering with camphor powder (2 per cent. camphor in starch powder). I have found both effective and free from the unpleasantly strong scent of such things as oil of lavender, etc.

Cockroaches

Dr. W. SIRR SHELDON (London, W.) writes in reply to "W. A. M.'s" inquiry (July 23rd, p. 180): I can confidently recommend Zonol, Ltd., 59 and 60, Old Bailey, E.C.4, who cleared my garage of cockroaches after one treatment. We had swarms of them, and had tried several treatments before theirs without any success. It is now nine months and they have not returned. I should be interested if "W. A. M." would let me know results.

Dr. C. C. COURT (Ilminster) writes: If equal parts of borax and sugar, powdered, is sprinkled on the floor near the holes whence the beetles issue it will, I think, be found quite effective. The holes in the walls and floor should be carefully stopped with cement after the beetles are cleared.

Income Tax

House Repairs : Bank Charges

"H. C. S." explains that he has hitherto been allowed £5 to £6 a year for house repairs applicable to the professional part of the premises. This year about £25 has been spent on decorations; the greater part of the work did not include the actual surgery. Can he claim the one-half basis applied to the rent and similar expenses? Also, can he deduct "bank charges" paid under a hire instalment system in connexion with the purchase of a car?

*** The allowance for repairs must have regard to the portion of the house concerned, and something less than one-half of the £25 would be claimable. The "bank interest" is allowable if it is in fact paid to a bank doing usual banking business, but not if it is paid to some other person or company, but is called "bank interest" because it is calculated according to the bank rates.

Insurance Premiums

"E. L. M." has for the past four years deducted his premiums for sickness and accident insurance, always declaring it as such in his statement. This year the inspector of taxes points out that the deduction is not allowable, and states that he intends to cancel the allowances for earlier years by additional assessments.

*** It must be admitted that such premiums are not paid on a life risk and consequently should not have been claimed or allowed. "E. L. M." has, however, some ground for objecting to the revision of past years in that the inspector of taxes had the facts before him when he erroneously made the allowances and cannot now properly allege that there has been "discovery" of a material fact. "Discovery" is necessary to increase a gross assessment for previous years, and, *mutatis mutandis*, the same principle would seem to apply to the cancellation of incorrect allowances. This argument, however, is on technical grounds only, and might be difficult to carry on personal appeal to the Commissioners. If the additional assessments are valid they would be good for the previous six years.

LETTERS, NOTES, ETC.

Analgesia in Childbirth

As a result of the experiments conducted by Mr. Louis Carnac Rivett at Queen Charlotte's and the Middlesex Hospitals (reported in this *Journal* on June 25th, p. 1172) the National Birthday Trust Fund is desirous of assisting the carrying out, under medical supervision, of further tests of the analgesic capsules recommended by Mr. Rivett, by supplying them free for a period of three months to all hospitals with maternity wards and midwifery training districts. Should this method of alleviating pain in maternity cases be found satisfactory, it is hoped by the National Birthday Trust Fund to assist in making the capsules available for use in that large proportion of births in which continuous medical attention is out of the question, and for which consequently no adequate relief is possible at the present time. Dr. J. S. Fairbairn, chairman of the Central Midwives Board, Mr. Rivett, Mr. Herbert Charles, Dr. Enid Browne of the Medical Women's Federation, and Mr. Arnold Walker, obstetric surgeon to the City of London Maternity Hospital, have consented to form a committee to report upon the results of tests carried out by the hospitals. It is hoped that all hospitals with maternity wards and districts will be willing to assist in carrying out the tests by giving a full trial to the capsules, and will report their results to the committee. Capsules, and report forms approved by the medical committee, will be supplied free on application to the Secretary of the National Birthday Trust Fund, Empire House, 175, Piccadilly, W.1, from whom a reprint of the report of Mr. Rivett's paper, read before the Royal Society of Medicine on June 17th, can also be obtained.

Artificial Breast

Dr. A. WHYTE DAVIDSON (Christchurch, Hants) writes: To many of your readers who may have experienced difficulty in finding a really satisfactory pad for use in cases after complete excision of the breast, the following note may be of interest. Stuffed pads readily lose shape, and become soiled or lumpy, while inflatable bags are liable to accidental puncture, with disturbing effects on sensitive people. I have recently had made for me a pad of "sorbo" rubber, which is of very natural consistency, is non-perishable, washable, and which has no liability to sudden collapse if punctured. A very natural contour can be moulded in process of manufacture to comply accurately with a sketch, and the whole "sorbo" pad is fixed to an overlapping flange of thin composition rubber which can be stitched into an ordinary brassière, as required. The cost is only a few shillings, and the results in appearance, durability, and comfort are excellent. The pad was made by Sorbo Rubber Sponge Products, Ltd., Woking.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 29, 30, 31, 33, 34, and 35 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 32 and 33.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 88.

DURING PREGNANCY

IN the preparation for motherhood be the patient a young primigravida or an experienced multigravida slim and delicate or generously built besides the routine tests among your urgent instructions will be

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